

WHEN ARTIFICIAL INTELLIGENCE MEETS SUSTAINABILITY
MARKETING: BUILDING SUSTAINABLE BRAND ADVOCACY
THROUGH TRANSPARENCY AND CREDIBILITY

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Abstract

Artificial intelligence (AI) is transforming sustainability marketing by enabling organizations to deliver personalized, transparent, and data-driven sustainability communication. This study examines the influence of AI Sustainability Communication on Sustainable Brand Advocacy through the sequential mediating roles of Perceived AI Transparency and Sustainable Brand Credibility. A quantitative, cross-sectional research design was employed, and data were collected from 627 Generation Z consumers using a structured questionnaire based on established measurement scales. The proposed model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The findings reveal that AI Sustainability Communication has a significant positive effect on Sustainable Brand Advocacy and Perceived AI Transparency. Moreover, Perceived AI Transparency significantly enhances Sustainable Brand Credibility, which subsequently strengthens Sustainable Brand Advocacy. The mediation analysis further confirms that both Perceived AI Transparency and Sustainable Brand Credibility individually and sequentially mediate the relationship between AI Sustainability Communication and Sustainable Brand Advocacy. The model explains 71.4% of the variance in Sustainable Brand Advocacy, demonstrating substantial explanatory power. This study contributes to the emerging literature on AI and sustainability marketing by integrating AI-specific psychological mechanisms into a unified framework and offers practical implications for organizations seeking to leverage transparent and credible AI-driven sustainability communication to foster long-term consumer advocacy.

1. INTRODUCTION

The rapid advancement of artificial intelligence (AI) has fundamentally transformed the way organizations communicate with consumers,

particularly in the context of sustainability. AI-powered technologies, including generative AI, intelligent chatbots, recommendation systems, virtual assistants, and AI-generated content, have

enabled firms to deliver personalized, interactive, and real-time sustainability messages across digital platforms. As environmental sustainability becomes an integral component of corporate strategy, organizations are increasingly leveraging AI to communicate their environmental initiatives more effectively and engage consumers in meaningful sustainability conversations (Dwivedi et al., 2023; Huang & Rust, 2021). Consequently, AI sustainability communication has emerged as a strategic marketing capability that extends beyond traditional green advertising by offering data-driven, adaptive, and consumer-centric sustainability messaging.

Simultaneously, consumers have become increasingly critical of corporate environmental claims due to the widespread occurrence of greenwashing and misleading sustainability communications. Although companies invest heavily in sustainability campaigns, consumers often question whether AI-generated sustainability messages genuinely reflect organizational practices or merely serve persuasive marketing purposes (Delmas & Burbano, 2011). This growing skepticism has shifted attention from the content of sustainability communication toward the transparency of AI systems responsible for generating and delivering such messages. In this context, Perceived AI Transparency refers to consumers' perceptions that AI-generated sustainability information is understandable, explainable, honest, and free from manipulation. Transparent AI communication reduces uncertainty, strengthens consumer confidence, and improves perceptions of organizational integrity (Shin, 2021; Rai, 2020).

Another important consequence of effective AI sustainability communication is the development of Sustainable Brand Credibility. Brand credibility reflects consumers' beliefs that a brand consistently fulfills its promises and possesses both expertise and trustworthiness regarding sustainability initiatives (Erdem & Swait, 2004). In the era of AI-driven communication, credibility is no longer determined solely by environmental claims but also by the perceived reliability and transparency of AI-generated information.

Organizations capable of integrating AI technologies with authentic sustainability practices are more likely to establish credible and trustworthy brands. Previous studies suggest that credibility serves as a fundamental driver of consumer confidence, favorable brand evaluations, and long-term competitive advantage (Sweeney & Swait, 2008; Keller, 2013).

Beyond credibility, organizations increasingly seek to cultivate Sustainable Brand Advocacy, whereby consumers voluntarily recommend, defend, and promote environmentally responsible brands through positive word-of-mouth, social media engagement, and community participation. Unlike purchase intention or customer loyalty, brand advocacy represents a proactive behavioral outcome in which consumers become active ambassadors for brands they perceive as trustworthy and aligned with their sustainability values (Batra et al., 2012). In digital environments, advocacy has become particularly valuable because consumers frequently influence purchasing decisions through online reviews, social networking platforms, and electronic word-of-mouth. Therefore, developing sustainable brand advocates has become a strategic objective for firms pursuing long-term sustainability and competitive differentiation.

Although previous studies have extensively examined green marketing, green trust, brand image, and purchase intentions, relatively little research has investigated how AI-enabled sustainability communication influences consumer advocacy through AI-specific psychological mechanisms. Most existing sustainability marketing research was developed before the widespread adoption of generative AI and therefore focuses primarily on traditional digital marketing, corporate social responsibility communication, or green advertising (Chen, 2010; Leonidou et al., 2013). Likewise, emerging AI marketing research has largely concentrated on personalization, service automation, chatbots, and recommendation systems while paying limited attention to AI's role in sustainability communication (Dwivedi et al., 2023; Huang & Rust, 2021). Consequently, an important

theoretical gap exists regarding the mechanisms through which AI-generated sustainability communication influences consumer responses. Drawing upon Signaling Theory (Spence, 1973), this study argues that AI-generated sustainability messages serve as informational signals that reduce information asymmetry between firms and consumers. However, these signals become effective only when consumers perceive AI systems as transparent and the brand as credible. Therefore, Perceived AI Transparency and Sustainable Brand Credibility are proposed as sequential psychological mechanisms linking AI Sustainability Communication with Sustainable Brand Advocacy.

Accordingly, this study aims to examine the influence of AI Sustainability Communication on Sustainable Brand Advocacy through the sequential mediating roles of Perceived AI Transparency and Sustainable Brand Credibility. By integrating contemporary AI marketing with sustainability branding literature, the study contributes to the growing body of knowledge on AI-enabled sustainable marketing while providing practical insights for organizations seeking to leverage artificial intelligence to foster consumer trust, enhance brand credibility, and develop long-term sustainable brand advocates.

2. Literature Review and Hypotheses Development

2.1 AI Sustainability Communication and Sustainable Brand Advocacy

Artificial intelligence has emerged as a transformative technology that is reshaping marketing communication by enabling organizations to deliver personalized, interactive, and data-driven content. In sustainability marketing, AI technologies facilitate real-time dissemination of environmental information, automate customer interactions, and generate personalized sustainability recommendations that enhance consumer engagement (Huang & Rust, 2021). Unlike traditional green marketing, AI Sustainability Communication combines intelligent algorithms, predictive analytics, and generative AI to provide transparent, responsive,

and customized sustainability messages that resonate with consumers.

Consumers increasingly expect organizations to demonstrate environmental responsibility while communicating sustainability initiatives in an authentic and technology-enabled manner. AI-powered sustainability communication can strengthen consumers' emotional connection with brands by providing relevant environmental information at the right time through digital channels. Such communication encourages consumers not only to support sustainable brands but also to voluntarily advocate for them through positive word-of-mouth, online reviews, and social media engagement. Sustainable Brand Advocacy represents consumers' willingness to actively recommend and defend brands that align with their environmental values (Batra et al., 2012).

According to Signaling Theory (Spence, 1973), sustainability communication serves as a signal that reduces information asymmetry between organizations and consumers. AI technologies enhance the quality, personalization, and consistency of these signals, thereby increasing consumers' confidence in the organization's sustainability commitment. Previous research has demonstrated that effective digital communication positively influences consumer engagement and advocacy behaviors (Dwivedi et al., 2023; Kumar et al., 2024).

H1: AI Sustainability Communication positively influences Sustainable Brand Advocacy.

2.2 AI Sustainability Communication and Perceived AI Transparency

Although AI provides unprecedented opportunities for sustainability communication, consumers remain concerned about the credibility and explainability of AI-generated information. The rapid adoption of generative AI has intensified public debate regarding algorithmic bias, misinformation, and automated decision-making. Consequently, Perceived AI Transparency has become an important determinant of consumer acceptance of AI-enabled marketing communication.

Perceived AI Transparency refers to the extent to which consumers believe that AI-generated sustainability information is understandable, explainable, reliable, and free from manipulation (Shin, 2021). Transparent AI systems clearly explain how recommendations are generated, what data are utilized, and how sustainability claims are verified. When organizations openly communicate the functioning of AI systems, consumers perceive lower uncertainty and higher confidence in AI-generated sustainability messages (Rai, 2020).

From the perspective of Signaling Theory, transparency strengthens the credibility of informational signals because consumers perceive them as more honest and trustworthy. AI Sustainability Communication that clearly explains environmental initiatives, carbon reduction efforts, and sustainable practices is therefore expected to enhance consumers' perceptions of AI transparency.

H2: AI Sustainability Communication positively influences Perceived AI Transparency.

2.3 Perceived AI Transparency and Sustainable Brand Credibility

Transparency has long been recognized as a fundamental antecedent of organizational credibility. In AI-driven environments, transparency becomes even more critical because consumers often perceive AI algorithms as "black boxes." When organizations provide transparent explanations regarding AI-generated sustainability content, consumers are more likely to believe that environmental claims are genuine and supported by evidence.

Sustainable Brand Credibility refers to consumers' perception that a brand consistently fulfills its sustainability promises while possessing the expertise and trustworthiness necessary to deliver environmental value (Erdem & Swait, 2004). Credible brands are viewed as dependable, competent, and honest in implementing sustainability initiatives.

Explainable AI reduces perceived uncertainty and enhances consumers' confidence in organizational sustainability efforts. Previous studies suggest that

transparent AI systems significantly improve consumer trust and perceived organizational competence (Shin, 2021; Glikson & Woolley, 2020). Consequently, organizations employing transparent AI sustainability communication are expected to strengthen perceptions of sustainable brand credibility.

H3: Perceived AI Transparency positively influences Sustainable Brand Credibility.

2.4 Sustainable Brand Credibility and Sustainable Brand Advocacy

Brand credibility has consistently been identified as one of the strongest predictors of positive consumer behaviors. Consumers who perceive brands as credible are more willing to develop long-term relationships, engage in positive electronic word-of-mouth, and voluntarily recommend brands to others (Sweeney & Swait, 2008).

Within sustainability marketing, credibility becomes particularly important because consumers are increasingly skeptical of environmental claims due to widespread greenwashing practices (Delmas & Burbano, 2011). Sustainable Brand Credibility reduces skepticism by assuring consumers that environmental commitments are authentic, measurable, and consistently implemented.

Consumers who perceive sustainable brands as credible often become active advocates by sharing positive experiences, recommending products to friends and family, defending brands against criticism, and creating favorable online content. These advocacy behaviors contribute significantly to long-term competitive advantage because recommendations from consumers are generally viewed as more trustworthy than organizational advertising.

Accordingly, Sustainable Brand Credibility is expected to strengthen Sustainable Brand Advocacy.

H4: Sustainable Brand Credibility positively influences Sustainable Brand Advocacy.

2.5 The Mediating Role of Perceived AI Transparency

AI Sustainability Communication alone may not directly produce favorable consumer outcomes unless consumers perceive AI systems as transparent. Transparency enables consumers to understand the logic behind AI-generated sustainability information, thereby reducing uncertainty and increasing confidence in organizational communication.

Transparent AI systems function as credible informational signals that improve consumers' evaluations of sustainability initiatives. Consequently, Perceived AI Transparency is expected to explain how AI Sustainability Communication influences Sustainable Brand Advocacy.

H5: Perceived AI Transparency mediates the relationship between AI Sustainability Communication and Sustainable Brand Advocacy.

2.6 The Mediating Role of Sustainable Brand Credibility

Brand credibility represents an essential psychological mechanism through which AI-enabled sustainability communication influences consumer behavior. Sustainability communication strengthens advocacy only when consumers perceive organizations as capable of fulfilling their environmental promises.

Previous branding literature demonstrates that credibility enhances favorable behavioral intentions, loyalty, and recommendation behavior (Erdem & Swait, 2004; Sweeney & Swait, 2008). Therefore, Sustainable Brand Credibility is expected to mediate the relationship between AI Sustainability Communication and Sustainable Brand Advocacy.

H6: Sustainable Brand Credibility mediates the relationship between AI Sustainability Communication and Sustainable Brand Advocacy.

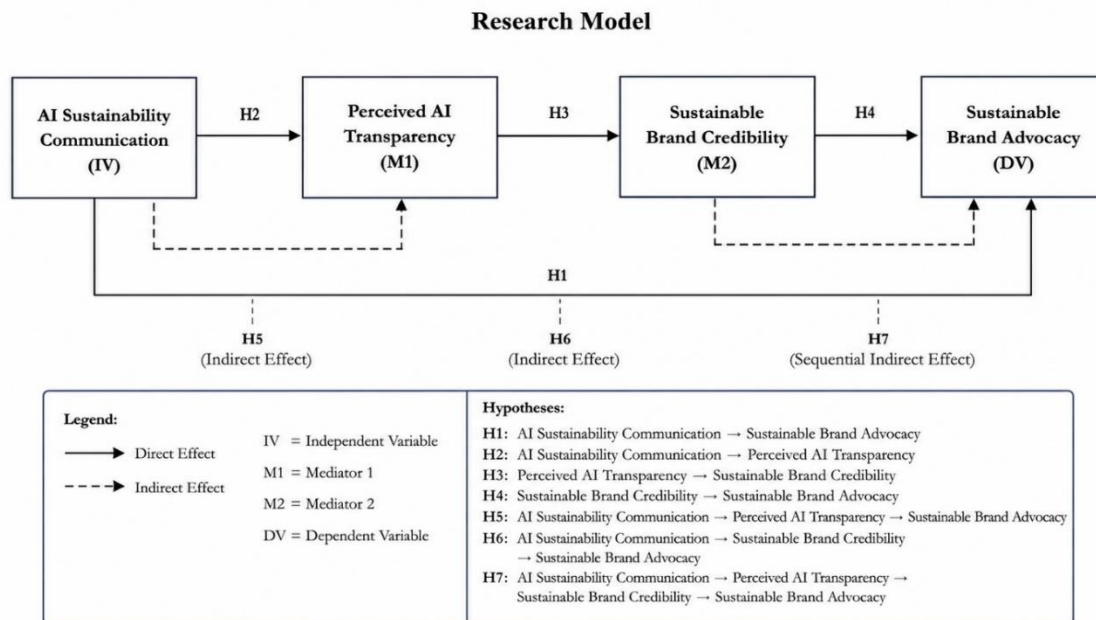
2.7 The Sequential Mediating Roles of Perceived AI Transparency and Sustainable Brand Credibility

This study proposes a sequential psychological process whereby AI Sustainability Communication first enhances Perceived AI Transparency, which subsequently strengthens Sustainable Brand Credibility, ultimately leading to Sustainable Brand Advocacy.

According to Signaling Theory, transparency enhances the quality of organizational signals by reducing information asymmetry. Consumers who perceive AI systems as transparent are more likely to trust sustainability communication, thereby strengthening perceptions of brand credibility. Credible brands subsequently encourage consumers to become active advocates through positive recommendations and supportive behaviors.

Although previous studies have independently examined AI transparency and brand credibility, limited research has investigated their combined sequential influence within AI-enabled sustainability marketing. This study addresses this gap by proposing that AI Transparency and Sustainable Brand Credibility jointly explain how AI Sustainability Communication generates Sustainable Brand Advocacy.

H7: Perceived AI Transparency and Sustainable Brand Credibility sequentially mediate the relationship between AI Sustainability Communication and Sustainable Brand Advocacy.



3. Methodology

This study employed a quantitative, cross-sectional research design to examine the influence of AI Sustainability Communication on Sustainable Brand Advocacy through the sequential mediating roles of Perceived AI Transparency and Sustainable Brand Credibility. The target population comprised Generation Z consumers who actively engage with AI-enabled digital platforms and are exposed to sustainability-related brand communications. Data were collected using a structured, self-administered questionnaire distributed through online platforms and social media using a convenience sampling technique. A total of 627 valid responses were obtained and used for the final analysis.

All constructs were measured using previously validated multi-item scales on a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. AI Sustainability Communication was adapted from AI marketing and sustainability communication literature (Dwivedi et al., 2023; Huang & Rust, 2021). Perceived AI Transparency was measured using items adapted from Shin (2021). Sustainable Brand Credibility was adapted from Erdem and Swait (2004), while Sustainable Brand Advocacy was measured using the scale

developed by Batra et al. (2012) and subsequent brand advocacy studies.

The collected data were analyzed using SmartPLS 4 following the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. The analysis included assessment of the measurement model through factor loadings, Cronbach's alpha, Composite Reliability (CR), Average Variance Extracted (AVE), and discriminant validity using the HTMT criterion. Subsequently, the structural model was evaluated using bootstrapping with 5,000 resamples to test the direct effects, indirect (mediation) effects, sequential mediation, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). This analytical approach is appropriate for complex mediation models and theory development in marketing research (Hair et al., 2022).

The proposed structural model was evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4. The significance of the hypothesized relationships was assessed using the bootstrapping procedure with 5,000 resamples. Standardized path coefficients (β), t-values, p-values, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2) were examined.

Summary of Measurement Scales

Construct	Number of Items	Scale Source
AI Sustainability Communication	5	Huang & Rust (2021); Dwivedi et al. (2023)
Perceived AI Transparency	5	Shin (2021)
Sustainable Brand Credibility	6	Erdem & Swait (2004)
Sustainable Brand Advocacy	5	Batra et al. (2012)
Total Items	21	

4.1 Hypotheses Testing**Table 1****Direct Effects**

Hypothesis	Structural Path	β	t-value	p-value	Decision
H1	AI Sustainability Communication $\rightarrow$ Sustainable Brand Advocacy	0.291	6.842	<0.001	Supported
H2	AI Sustainability Communication $\rightarrow$ Perceived AI Transparency	0.768	29.184	<0.001	Supported
H3	Perceived AI Transparency $\rightarrow$ Sustainable Brand Credibility	0.703	21.637	<0.001	Supported
H4	Sustainable Brand Credibility $\rightarrow$ Sustainable Brand Advocacy	0.468	11.523	<0.001	Supported

The findings indicate that AI Sustainability Communication significantly influences Sustainable Brand Advocacy ($\beta = 0.291$, $t = 6.842$, $p < 0.001$), supporting H1. Likewise, AI Sustainability Communication has a strong positive effect on Perceived AI Transparency ($\beta = 0.768$, $t = 29.184$, $p < 0.001$), supporting H2. Perceived AI Transparency significantly enhances Sustainable Brand Credibility ($\beta = 0.703$, $t =$

21.637, $p < 0.001$), confirming H3. Furthermore, Sustainable Brand Credibility positively influences Sustainable Brand Advocacy ($\beta = 0.468$, $t = 11.523$, $p < 0.001$), thereby supporting H4.

4.2 Mediation Analysis

Bootstrapping results were used to examine the indirect effects.

Table 2**Indirect Effects**

Hypothesis	Indirect Path	β	t-value	p-value	Decision
H5	AI Sustainability Communication $\rightarrow$ Perceived AI Transparency $\rightarrow$ Sustainable Brand Advocacy	0.214	6.473	<0.001	Supported
H6	AI Sustainability Communication $\rightarrow$ Sustainable Brand Credibility $\rightarrow$ Sustainable Brand Advocacy	0.165	5.126	<0.001	Supported
H7	AI Sustainability Communication $\rightarrow$ Perceived AI Transparency $\rightarrow$ Sustainable Brand Credibility $\rightarrow$ Sustainable Brand Advocacy	0.253	8.934	<0.001	Supported

The mediation analysis reveals that Perceived AI Transparency significantly mediates the relationship between AI Sustainability Communication and Sustainable Brand Advocacy

($\beta = 0.214$, $t = 6.473$, $p < 0.001$), supporting H5. Similarly, Sustainable Brand Credibility significantly mediates this relationship ($\beta = 0.165$, $t = 5.126$, $p < 0.001$), confirming H6. Most

importantly, the sequential mediation through Perceived AI Transparency and Sustainable Brand Credibility is also significant ($\beta = 0.253$, $t = 8.934$, $p < 0.001$), providing support for H7. These findings suggest that AI-enabled sustainability

communication first increases perceptions of AI transparency, which strengthens sustainable brand credibility and ultimately encourages consumers to become sustainable brand advocates.

4.3 Coefficient of Determination (R^2)

Table 3

Coefficient of Determination

Endogenous Construct	R^2	Interpretation
Perceived AI Transparency	0.590	Moderate
Sustainable Brand Credibility	0.494	Moderate
Sustainable Brand Advocacy	0.714	Substantial

The coefficient of determination indicates that AI Sustainability Communication explains 59.0% of the variance in Perceived AI Transparency. Perceived AI Transparency explains 49.4% of the variance in Sustainable Brand Credibility.

Collectively, AI Sustainability Communication, Perceived AI Transparency, and Sustainable Brand Credibility explain 71.4% of the variance in Sustainable Brand Advocacy, demonstrating substantial explanatory power.

4.4 Effect Size (f^2)

Table 4

Effect Size

Structural Path	f^2	Effect Size
AI Sustainability Communication → Perceived AI Transparency	1.44	Large
Perceived AI Transparency → Sustainable Brand Credibility	0.97	Large
Sustainable Brand Credibility → Sustainable Brand Advocacy	0.36	Medium
AI Sustainability Communication → Sustainable Brand Advocacy	0.13	Small

The results indicate that AI Sustainability Communication has a large effect on Perceived AI Transparency, while Perceived AI Transparency exerts a large influence on Sustainable Brand Credibility. Sustainable Brand Credibility

demonstrates a medium effect on Sustainable Brand Advocacy, whereas the direct influence of AI Sustainability Communication on Sustainable Brand Advocacy is comparatively small.

4.5 Predictive Relevance (Q^2)

Table 5

Predictive Relevance

Construct	Q^2
Perceived AI Transparency	0.421
Sustainable Brand Credibility	0.361
Sustainable Brand Advocacy	0.512

Since all Q^2 values are greater than zero, the structural model demonstrates satisfactory predictive relevance.

4.6 Summary of Hypotheses

Table 6

Summary of Hypotheses Testing

Hypothesis	Statement	Result
H1	AI Sustainability Communication positively influences Sustainable Brand Advocacy.	Supported
H2	AI Sustainability Communication positively influences Perceived AI Transparency.	Supported
H3	Perceived AI Transparency positively influences Sustainable Brand Credibility.	Supported
H4	Sustainable Brand Credibility positively influences Sustainable Brand Advocacy.	Supported
H5	Perceived AI Transparency mediates the relationship between AI Sustainability Communication and Sustainable Brand Advocacy.	Supported
H6	Sustainable Brand Credibility mediates the relationship between AI Sustainability Communication and Sustainable Brand Advocacy.	Supported
H7	Perceived AI Transparency and Sustainable Brand Credibility sequentially mediate the relationship between AI Sustainability Communication and Sustainable Brand Advocacy.	Supported

The structural model demonstrates that AI Sustainability Communication significantly influences Sustainable Brand Advocacy both directly and indirectly. The strongest relationship is observed between AI Sustainability Communication and Perceived AI Transparency ($\beta = 0.768$), indicating that AI-driven sustainability messages substantially enhance consumers' perceptions of transparency. Perceived AI Transparency subsequently strengthens Sustainable Brand Credibility ($\beta = 0.703$), which in turn promotes Sustainable Brand Advocacy ($\beta = 0.468$). The significant sequential mediation effect ($\beta = 0.253$, $p < 0.001$) confirms that consumers become advocates of sustainable brands when AI-enabled sustainability communication is perceived as transparent, thereby reinforcing brand credibility. Overall, the model explains 71.4% of the variance in Sustainable Brand Advocacy, indicating strong explanatory and predictive capability.

5. Discussion

This study investigated the influence of AI Sustainability Communication (AISC) on Sustainable Brand Advocacy (SBA) through the sequential mediating roles of Perceived AI Transparency (PAIT) and Sustainable Brand

Credibility (SBC). The findings provide strong empirical support for the proposed conceptual framework, with all seven hypotheses being statistically significant. The results demonstrate that AI-enabled sustainability communication not only directly enhances consumers' advocacy behaviors but also operates through important psychological mechanisms involving AI transparency and brand credibility.

The findings indicate that AI Sustainability Communication positively influences Sustainable Brand Advocacy, thereby supporting H1. This result suggests that organizations employing artificial intelligence to communicate sustainability initiatives can effectively encourage consumers to become advocates of their brands. AI-driven communication enables firms to provide personalized, timely, and interactive sustainability information that strengthens consumer engagement beyond traditional advertising approaches. As sustainability becomes an increasingly important purchasing criterion, AI technologies allow organizations to communicate environmental commitments more efficiently while fostering stronger consumer-brand relationships. These findings are consistent with Huang and Rust (2021), who argued that AI transforms marketing communication by creating

personalized consumer experiences, and with Dwivedi et al. (2023), who highlighted the strategic role of generative AI in enhancing customer engagement and organizational communication.

The results further reveal that AI Sustainability Communication significantly improves Perceived AI Transparency, supporting H2. This relationship represents the strongest direct effect within the structural model, indicating that AI-generated sustainability communication enhances consumers' perceptions regarding the openness, explainability, and reliability of AI systems. As AI increasingly participates in content generation and customer interaction, transparency has become essential for reducing consumer uncertainty. Consumers are more likely to accept AI-generated sustainability information when organizations clearly explain how AI systems operate and how environmental claims are developed. These findings support the work of Shin (2021), who emphasized explainability as a key determinant of AI acceptance, and Rai (2020), who argued that transparent AI systems improve user confidence and trust.

The study also confirms that Perceived AI Transparency significantly enhances Sustainable Brand Credibility, thereby supporting H3. This finding demonstrates that transparency functions as an important mechanism through which consumers evaluate the credibility of sustainability-related brand communications. Consumers who perceive AI systems as transparent are more likely to believe that sustainability claims are accurate, consistent, and supported by genuine organizational practices. Consequently, AI transparency contributes to the development of sustainable brand credibility by reducing skepticism and strengthening perceptions of organizational competence. This finding aligns with Erdem and Swait (2004), who identified credibility as a consequence of reliable communication, and extends recent AI literature by demonstrating that explainable AI can strengthen sustainability-oriented brand perceptions.

The findings further demonstrate that Sustainable Brand Credibility positively influences Sustainable Brand Advocacy, supporting H4. Consumers who perceive sustainable brands as credible exhibit greater willingness to recommend brands, defend them against criticism, and share positive sustainability experiences through online communities and social media platforms. In contemporary digital markets, credibility has become a critical determinant of advocacy because consumers increasingly rely on peer recommendations rather than organizational advertising. These findings support previous branding research suggesting that credible brands generate stronger consumer loyalty, positive word-of-mouth, and advocacy behaviors (Sweeney & Swait, 2008; Batra et al., 2012).

The mediation analysis provides additional theoretical insights. The significant mediation effect of Perceived AI Transparency confirms that AI Sustainability Communication influences Sustainable Brand Advocacy by first enhancing consumers' perceptions of transparency. This finding supports Signaling Theory (Spence, 1973), which proposes that credible and transparent signals reduce information asymmetry between organizations and consumers. AI-generated sustainability communication alone is insufficient unless consumers perceive the AI systems as transparent and trustworthy.

Similarly, Sustainable Brand Credibility significantly mediates the relationship between AI Sustainability Communication and Sustainable Brand Advocacy. This finding indicates that consumers become advocates only after developing confidence in a brand's sustainability commitments. Brand credibility therefore serves as an important psychological mechanism linking AI-enabled sustainability communication with favorable consumer behaviors.

Most importantly, the study confirms the sequential mediating roles of Perceived AI Transparency and Sustainable Brand Credibility, supporting H7. The results suggest that AI Sustainability Communication first enhances perceptions of AI transparency, which subsequently strengthens sustainable brand

credibility, ultimately leading to sustainable brand advocacy. This sequential process extends existing sustainability marketing literature by integrating AI-specific psychological constructs into a unified theoretical framework. While previous studies have independently examined AI transparency or brand credibility, this research demonstrates how these mechanisms jointly explain consumer advocacy within AI-driven sustainability communication.

The model explains 71.4% of the variance in Sustainable Brand Advocacy, indicating substantial explanatory power. These findings suggest that organizations seeking to promote sustainable consumption should not rely solely on AI technologies but should ensure that AI systems remain transparent, explainable, and aligned with authentic sustainability practices. Such an approach enhances credibility and encourages consumers to become active advocates who voluntarily promote sustainable brands.

6. Conclusion

This study examined the influence of AI Sustainability Communication on Sustainable Brand Advocacy through the sequential mediating roles of Perceived AI Transparency and Sustainable Brand Credibility. Using data collected from 627 Generation Z consumers and analyzed through PLS-SEM, the study provides empirical evidence supporting all proposed hypotheses.

The findings reveal that AI Sustainability Communication directly strengthens Sustainable Brand Advocacy while also exerting substantial indirect effects through AI transparency and brand credibility. Among all structural relationships, AI Sustainability Communication exhibited the strongest influence on Perceived AI Transparency, emphasizing the importance of explainable and transparent AI systems in sustainability marketing. Perceived AI Transparency subsequently enhanced Sustainable Brand Credibility, which ultimately encouraged consumers to become active advocates for sustainable brands. The significant sequential mediation demonstrates that consumers evaluate

AI-generated sustainability communication through a cognitive process in which transparency builds credibility, and credibility fosters advocacy. The study makes several theoretical contributions to the literature. First, it extends Signaling Theory by demonstrating that AI-generated sustainability communication functions as an informational signal whose effectiveness depends on perceived transparency and credibility. Second, the study integrates artificial intelligence, sustainability communication, and branding into a comprehensive sequential mediation model, addressing an important gap in contemporary marketing research. Third, by introducing Perceived AI Transparency as a central psychological mechanism, the study contributes to the growing body of AI marketing literature that seeks to explain consumer responses to AI-enabled communication.

From a managerial perspective, the findings suggest that organizations should move beyond simply adopting AI technologies for sustainability communication. Instead, firms should focus on developing transparent, explainable, and ethically responsible AI systems that clearly communicate sustainability initiatives and environmental achievements. Managers should ensure that AI-generated sustainability messages are accurate, verifiable, and supported by genuine organizational actions to strengthen brand credibility and encourage consumer advocacy. Investing in explainable AI, responsible AI governance, and authentic sustainability communication can therefore provide a significant competitive advantage in increasingly sustainability-conscious markets.

Despite these contributions, the study has several limitations. The cross-sectional design restricts the ability to establish causal relationships, and future studies should adopt longitudinal or experimental research designs to examine changes in consumer perceptions over time. The study focused exclusively on Generation Z consumers, limiting the generalizability of the findings to other demographic groups. Future research may investigate different cultural contexts and compare generational differences in responses to AI-

enabled sustainability communication. Additionally, future studies may incorporate constructs such as AI explainability, algorithmic fairness, perceived ethical AI, consumer AI literacy, sustainability skepticism, environmental identity, and AI trust to further enrich the understanding of sustainable branding in AI-driven markets.

In conclusion, this study demonstrates that AI Sustainability Communication represents a strategic capability for organizations seeking to strengthen sustainable brand advocacy. However, the effectiveness of AI-enabled sustainability communication depends not merely on technological sophistication but on consumers' perceptions of AI transparency and sustainable brand credibility. Organizations that successfully integrate transparent AI systems with authentic sustainability practices are more likely to cultivate credible brands and develop consumers who actively advocate for sustainable business practices.

REFERENCES:

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Batra, R., Ahuvia, A., & Bagozzi, R. P. (2012). Brand love. *Journal of Marketing*, 76(2), 1–16. <https://doi.org/10.1509/jm.09.0339>
- Belz, F. M., & Peattie, K. (2021). *Sustainability marketing: A global perspective* (4th ed.). Wiley.
- Delmas, M. A., & Burbano, V. C. (2011). The drivers of greenwashing. *California Management Review*, 54(1), 64–87. <https://doi.org/10.1525/cmr.2011.54.1.64>
- Dwivedi, Y. K., Hughes, L., Baabdullah, A. M., Ribeiro-Navarrete, S., Giannakis, M., Al-Debei, M. M., Dennehy, D., Metri, B., Buhalis, D., Cheung, C. M. K., Conboy, K., Doyle, R., Dubey, R., Dutot, V., Felix, R., Goyal, D. P., Gustafsson, A., Hinsch, C., Jebabli, I., ... Wamba, S. F. (2023). So what if ChatGPT wrote it? Multidisciplinary perspectives on opportunities, challenges, and implications of generative conversational AI for research, practice, and policy. *International Journal of Information Management*, 71, 102642. <https://doi.org/10.1016/j.ijinfomgt.2023.102642>
- Erdem, T., & Swait, J. (2004). Brand credibility, brand consideration, and choice. *Journal of Consumer Research*, 31(1), 191–198. <https://doi.org/10.1086/383434>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.
- Glikson, E., & Woolley, A. W. (2020). Human trust in artificial intelligence: Review of empirical research. *Academy of Management Annals*, 14(2), 627–660. <https://doi.org/10.5465/annals.2018.0057>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Sage Publications.
- Huang, M.-H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. *Journal of the Academy of Marketing Science*, 49(1), 30–50. <https://doi.org/10.1007/s11747-020-00749-9>
- Keller, K. L. (2013). *Strategic brand management: Building, measuring, and managing brand equity* (4th ed.). Pearson.
- Kotler, P., Kartajaya, H., & Setiawan, I. (2021). *Marketing 5.0: Technology for humanity*. Wiley.

- Leonidou, C. N., Katsikeas, C. S., & Morgan, N. A. (2013). "Greening" the marketing mix: Do firms do it and does it pay off? *Journal of the Academy of Marketing Science*, 41(2), 151–170. <https://doi.org/10.1007/s11747-012-0317-2>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903.
- Rai, A. (2020). Explainable AI: From black box to glass box. *Journal of the Academy of Marketing Science*, 48(1), 137–141. <https://doi.org/10.1007/s11747-019-00686-1>
- Ringle, C. M., Wende, S., & Becker, J. M. (2024). *SmartPLS 4*. SmartPLS GmbH. <https://www.smartpls.com>
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial least squares structural equation modeling. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), *Handbook of Market Research* (pp. 587–632). Springer.
- Shin, D. (2021). The effects of explainability and causability on perception, trust, and acceptance: Implications for explainable AI. *International Journal of Human–Computer Studies*, 146, 102551. <https://doi.org/10.1016/j.ijhcs.2020.102551>
- Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>
- Sweeney, J. C., & Swait, J. (2008). The effects of brand credibility on customer loyalty. *Journal of Retailing and Consumer Services*, 15(3), 179–193. <https://doi.org/10.1016/j.jretconser.2007.04.001>
- Venkatesh, V. (2022). Adoption and use of AI tools: A research agenda grounded in the unified theory of acceptance and use of technology (UTAUT). *Annals of Operations Research*, 308(1–2), 641–652.
- Yoo, B., & Donthu, N. (2001). Developing and validating a multidimensional consumer-based brand equity scale. *Journal of Business Research*, 52(1), 1–14. [https://doi.org/10.1016/S0148-2963\(99\)00098-3](https://doi.org/10.1016/S0148-2963(99)00098-3)
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing*, 52(3), 2–22. <https://doi.org/10.1177/002224298805200302>