

"AI As a Tool for Measuring and Influencing Consumer Perception of Sustainability"

¹Sheeba sharon SJ, ²Dr. R. Mary Sophia Chitra

¹Research Scholar,

²Research Supervisor,

Research Department of Commerce, The American College, Madurai-625002

Abstract: The growing demand for sustainable products has positioned consumer perception as a critical factor in driving the green economy. Artificial Intelligence (AI) As A Tool for Measuring and Influencing Consumer Attitudes Toward Sustainability. This paper explores the dual role of AI in analysing consumer perception and shaping behaviour towards sustainable products. By leveraging machine learning, sentiment analysis, and predictive modeling, AI can provide deep insights into consumer preferences, enabling businesses to tailor their strategies for effective engagement. Additionally, AI-driven tools, such as personalized recommendations, chat bots, and targeted marketing campaigns, transform how sustainability narratives are communicated, fostering a shift in consumer behavior. This study highlights real-world applications of AI in sustainability marketing, discusses ethical considerations, and evaluates its potential to bridge the gap between consumer intent and action. The findings underscore the significance of integrating AI into sustainability strategies, paving the way for a more informed and environmentally conscious marketplace.

Keywords: consumer perception, sustainability marketing and sustainable products

Introduction

In an era of heightened environmental awareness, consumer perception of sustainability plays a pivotal role in shaping market dynamics. However, understanding and influencing these perceptions require sophisticated tools capable of analyzing complex consumer behavior. Artificial Intelligence (AI) has emerged as a game-changer, offering innovative solutions to measure, analyze, and impact consumer attitudes towards sustainable products. By utilizing techniques like sentiment analysis, predictive modeling, and natural language processing, AI enables businesses to uncover actionable insights and design targeted strategies. This paper examines how AI serves not only as a measurement tool but also as a catalyst for fostering sustainable consumer behavior, contributing to a more sustainable future.

Review Of Literature

Kumar and Singh (2021) discuss how AI-driven recommendation systems, personalized advertisements, and targeted campaigns are being employed to promote sustainable products. By analyzing consumer preferences, AI helps brands craft tailored messages that resonate with individual values, thus influencing consumer perceptions of a brand's commitment to sustainability.

Smith and Zhang (2022), AI tools, including sentiment analysis and predictive modeling, allow organizations to gauge public opinion about their sustainability practices. These tools help track consumer feedback from sources such as social media and online reviews, which are critical in shaping brands' strategies and improving consumer engagement with sustainable practices. The ability to analyze this data allows businesses to adjust their sustainability messaging and initiatives to better align with consumer expectations.

Lee et al. (2023) highlight concerns about the ethical implications of AI usage, particularly in relation to data privacy and transparency. While AI enables companies to track consumer sentiment and adjust strategies, it also

raises questions about the ethical treatment of personal data. The authors emphasize the importance of ensuring that AI systems are transparent and accountable, as consumer trust can be significantly impacted by how their data is handled, especially when it comes to sensitive sustainability-related information.

Patel and Thomas (2024) suggest that AI may struggle to capture the nuances of individual consumer values, particularly when it comes to deep-seated beliefs about environmental and social issues. They argue that the ethical use of AI requires greater transparency and improved interpretability to ensure that consumers' personal preferences and ethical considerations are respected.

Statement Of The Problem

The growing emphasis on sustainability in consumer markets presents a challenge for businesses to understand and influence consumer perceptions effectively. Traditional methods of analysing consumer behaviour often fall short in capturing the complexities of attitudes and preferences towards sustainable products. At the same time, consumers may lack awareness or motivation to align their purchasing decisions with sustainable practices. This disconnect hinders the adoption of eco-friendly products, limiting their market impact and sustainability goals. The integration of Artificial Intelligence offers a transformative approach to address this gap by providing deep insights into consumer behavior and enabling targeted strategies to influence perceptions and drive sustainable consumption. However, there remains a need to explore and validate the potential of AI as a tool for bridging this gap effectively. Dixit, P., & Singh, P. B. (2024)

Objective Of The Study

- To identify the role of Artificial Intelligence in accurately measuring consumer perceptions towards sustainable products.

Research Methodology

This study will follow a descriptive research design. Both qualitative and quantitative methods will be employed to gather data. Data will be collected through structured questionnaires distributed to consumers of sustainable products and the Secondary Data Existing literature, will be reviewed to understand the broader trends and challenges in AI services. A sample size of 100 respondents will be targeted and collected Data.

ANALYSIS BASED SOCIO ECONOMIC CONDITION

VARIABLES	CHARACTERISTICS	RESPONDENTS IN PERCENTAGE
GENDER	Male	43
	Female	55
	Total	100
AGE	BELOW 25	28
	26-35	21
	36-45	30
	46-55	14
	ABOVE56	7
	Total	100
	S.S.L.C	12

EDUCATIONAL QUALIFICATION	H.S	14
	U.G	38
	P.G	22
	DIPLAMO	14
	Total	100
INCOME OF THE FAMILY	BELOW 20,000	3
	20,001-40,000	32
	40,001-60,000	46
	60,001-80,000	14
	ABOVE 80,001	3
	Total	100
FAMILY SIZE	BELOW 3	16
	4-6	64
	ABOVE 6	20
	Total	100
AWARE THAT AI IS USED TO ANALYZE CONSUMER PERCEPTIONS	yes	56
	No	44
	Total	100

Inference: The demographic data of the respondents reveals diverse characteristics across key variables. Regarding gender, the sample comprises 55% females and 45% males, indicating a slightly higher representation of women. Age-wise, the largest group of respondents falls in the 36–45 age bracket (30%), followed by those below 25 years (28%), while the least represented are individuals above 56 years (7%). In terms of educational qualifications, a substantial proportion has completed undergraduate studies (38%), followed by postgraduate qualifications (22%), whereas only 12% have S.S.L.C. as their highest qualification. Family income shows a concentration in the middle-income groups, with 46% earning ₹40,001–60,000 and 32% earning ₹20,001–40,000, while incomes below ₹20,000 and above ₹80,000 account for just 3% each. Family size predominantly ranges between 4–6 members (64%), with smaller families (below three members) constituting 16%, and larger families (above six members) at 20%. These insights collectively underscore a sample profile marked by a balanced gender distribution, middle-aged predominance, and moderate to high educational qualifications, mid-level family income, and medium-sized households.

Garrett Ranking Technique:

Rank The Benefits Measuring And Influencing The Use Of Ai In Analyzing Consumer Perceptions Of Sustainability.

The use of AI in analysing consumer perceptions of sustainability offers significant benefits that enhance understanding and influence behaviour. By leveraging AI's capabilities, businesses can gain deeper insights and drive impactful engagement in promoting sustainable practices.

S.NO	STATEMENT	MEAN SCORE	AVERAGE	RANK
1.	Faster accessibility	5756	57.56	I
2.	Identification of hidden patterns	5675	56.75	II
3.	Improved accuracy	5445	54.45	III
4.	Enhanced customer engagement	5325	53.25	IV
5.	Real-time insights	5290	52.90	V
6.	Transparency	4997	49.97	VI
7.	Bias in data interpretation	4869	48.69	VII
8.	Privacy issues	4652	46.52	VIII
9.	Over-reliance on technology	4539	45.39	IX
10	Overgeneralization of Results	4256	42.56	X

Inferences

The rankings highlight key benefits of AI in analyzing consumer perceptions of sustainable products. "Faster accessibility" emerges as the most valued benefit, emphasizing AI's efficiency in handling data. This is followed by "Identification of hidden patterns" and "Improved accuracy," underscoring AI's ability to derive meaningful insights and ensure precision. Other benefits, such as "Enhanced customer engagement" and "Real-time insights," are also acknowledged but rank slightly lower. The results suggest that stakeholders prioritize AI's speed, analytical depth, and accuracy in driving sustainability-focused consumer insights.

Conclusion

In conclusion, the study underscores the pivotal role of AI as a transformative tool in measuring and influencing consumer perceptions of sustainability. The findings reveal that stakeholders prioritize AI's capacity for faster accessibility, identification of hidden patterns, and improved accuracy, highlighting its efficiency and analytical depth. While enhanced customer engagement and real-time insights are also recognized, the emphasis remains on AI's ability to deliver precise, actionable sustainability-focused consumer insights. These results reinforce AI's significance in advancing sustainable product strategies by enabling data-driven decision-making.

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