

Master's Degree Program in **Data-Driven Marketing**

Specialization in
Digital Marketing & Analytics

**From Recommendations to Well-Being: The Influence of AI on
Sustainable Consumer Decisions**

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From recommendations to well-being: The influence of AI on sustainable consumer decisions

by

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STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism, any form of undue use of information or falsification of results along the process leading to its elaboration. I further declare that I have fully acknowledged the Rules of Conduct and Code of Honor from the NOVA Information Management School.

[Lisbon, 30th April, 2026]

Beatriz do Amaral Brites Baleiras Gama

DEDICATION

This dissertation is dedicated to my parents, my greatest sources of strength, and inspiration.

To my father, thank you for showing me, in the most powerful way, what it truly means to fight, to endure, and to never give up. Your resilience and determination have inspired me beyond words and taught me that true strength lies in rising, no matter how difficult the circumstances.

To my mother, thank you for giving me everything you have and more. Your unconditional love, your constant support, and your ability to overcome every challenge life has placed in your path makes you, to me, the strongest woman in the world. You are the foundation that holds everything together, and I would not be here without you.

This work carries a part of both of you in every page.

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I would like to express my gratitude to everyone who supported me throughout the development of this thesis.

First, I would like to thank my parents for their constant support, encouragement, and trust in me. Their presence and guidance have been essential during my academic journey.

I am also very grateful to my aunt, sister, and grandmother for their care, support, and encouragement. Their presence has always given me strength and motivation.

To my boyfriend, thank you for your patience, understanding, and support, especially during the more demanding moments of this process. Your encouragement made a real difference.

Finally, I would like to thank my supervisor, Professor Simoni Rohden, for her guidance, availability, and valuable feedback throughout this project. Her support was essential in the development of this work.

ABSTRACT

This study explores the role of artificial intelligence (AI)-based recommendations in shaping consumer responses within the context of sustainable consumption. Specifically, it examines how sustainability-oriented versus traditional chatbot recommendations influence consumer trust, purchase intention, and subjective well-being. Drawing on a quantitative experimental design, data were collected from 111 participants who were randomly assigned to one of two recommendation scenarios. The findings reveal that the type of recommendation does not exert a statistically significant effect on either purchase intention or subjective well-being, suggesting that sustainability framing alone may be insufficient to drive meaningful changes in consumer behavior. In contrast, trust in AI recommendations emerges as a critical determinant, significantly influencing both behavioral and emotional outcomes. Consumers who perceive AI systems as reliable and credible are more likely to report higher purchase intention and enhanced well-being. Furthermore, environmental awareness plays a significant role, positively affecting both trust and consumer responses, highlighting the importance of individual predispositions in shaping reactions to AI-driven interventions. These results contribute to the literature by challenging assumptions regarding the effectiveness of sustainability-oriented recommendations and by reinforcing the central role of trust in human–AI interactions. From a managerial perspective, the study underscores the importance of designing transparent, reliable, and user-centered AI systems, rather than relying solely on sustainability cues to influence consumer decision-making

KEYWORDS

Artificial Intelligence; Sustainable Consumption; Consumer Trust; Purchase Intention; Subjective Well-Being; AI Recommendations; Consumer Behavior

Sustainable Development Goals (SDG):



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LIST OF ABBREVIATIONS AND ACRONYMS

AI Artificial Intelligence

ANOVA Analysis of Variance

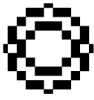
CV Control Variable

DV Dependent Variable

GLM General Linear Model

IV Independent Variable

SWB Subjective Well-Being



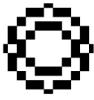
1. INTRODUCTION

Artificial Intelligence (AI) has been revolutionizing the way consumers make purchasing decisions, particularly through recommendation systems and conversational agents. These technologies not only simplify the shopping journey but also open possibilities for promoting sustainable consumption, for instance by highlighting energy-efficient alternatives or products with a lower environmental footprint (Acatrinei et al., 2025; Cao & Liu, 2023). The extent to which these systems succeed depends largely on consumer trust, perceptions of risk, and the credibility of the information provided, including concerns about misleading practices such as greenwashing (Zhang et al., 2020; Acatrinei et al., 2025).

This dynamic reveals an opportunity for intelligent systems not only to guide individual choices but also to encourage a broader culture of conscious and responsible consumption. Beyond rational decision-making, the emotional dimension of human–AI interaction plays a decisive role. Feelings such as mistrust can strongly influence both immediate purchase intentions (Zhang et al., 2019) and the overall sense of well-being associated with the shopping experience (Mallick et al., 2024). The way consumers react to recommendations delivered by virtual assistants determines not just their short-term satisfaction but also their willingness to engage with such technologies in future interactions.

A key factor in enhancing both effectiveness and user experience is personalization. Successful human–computer interactions depend on systems that can adapt to users' needs, preferences, and goals. In the context of AI-driven systems, personalized recommendations can not only support greener choices but also contribute to more positive and engaging consumer experiences, connecting both cognitive and emotional dimensions of consumer behavior. This highlights the importance of user modeling in AI-driven systems: personalized recommendations can simultaneously support greener choices and positive emotional experiences, bridging cognitive and affective dimensions of consumer behavior.

Despite the growing academic and managerial interest in artificial intelligence, sustainability, and consumer behavior, important gaps remain. In particular, existing



research has not fully explored how AI-driven recommendations can simultaneously promote sustainable choices while fostering consumer trust and enhancing consumer well-being. Addressing this gap is especially relevant given the increasing reliance on AI-powered recommendation systems in digital marketplaces. Understanding how different types of chatbot recommendations—whether sustainability-oriented or conventional—shape consumer trust, and how this trust influences both behavioral and emotional outcomes, is essential for designing more effective and responsible AI-driven consumer experiences.

Considering these gaps, the present study is guided by the following research question:

“How do different types of chatbot recommendations (sustainable vs. non-sustainable) influence consumer trust, and how does trust affect purchase intention and subjective well-being?”

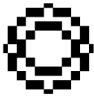
To address this question, the study pursues the following objectives. First, it seeks to assess the levels of trust generated by sustainable versus non-sustainable chatbot recommendations. Second, it aims to examine how trust influences both consumers’ intention to purchase and their subjective well-being during the shopping experience.

From a practical perspective, this research provides relevant insights for companies and decision-makers operating at the intersection of consumption and technology. By examining how AI-driven recommendations influence trust and consumer responses, the study contributes to a better understanding of how digital systems can be designed to enhance user engagement and promote more sustainable consumption patterns. In particular, the findings offer guidance for managers seeking to implement AI recommendation systems that not only improve conversion rates but also foster positive consumer experiences and long-term trust. This is especially relevant in a context where consumers are increasingly attentive to sustainability issues yet remain sensitive to perceptions of credibility and authenticity in digital environments.

Furthermore, although the role of artificial intelligence in marketing has been widely acknowledged, studies examining the development of trust in real-time chatbot



interactions remain limited. Existing research suggests that system characteristics such as transparency, responsiveness, and perceived competence play a key role in shaping trust in AI agents. Previous research suggests that conversational systems that adapt to users' inputs are often perceived as more trustworthy and competent (Zhang et al., 2020). This highlights the importance of understanding how intelligent assistants can be designed to build trust and encourage more positive long-term consumer responses



2. LITERATURE REVIEW

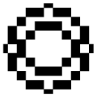
2.1 AI RECOMMENDATIONS

AI-based recommendations employ machine learning algorithms to identify patterns within data and generate suggestions that guide decisions or actions (Zhang et al., 2020). These systems analyze information to provide personalized recommendations, thereby enhancing the user experience and assisting in decision-making (Kanwal & Amjad, 2024).

Although there are different approaches, the two main categories that stand out are: traditional recommendation systems, which analyze users' history and preferences to suggest relevant products, movies, music, or other items, and systems based on generative artificial intelligence, capable of creating new content or suggestions, such as personalized texts or plans. In this work, the term “AI recommendations” refers specifically to traditional recommendation systems, not recommendations generated by generative AI.

When it comes to how artificial intelligence can support more sustainable choices, it makes more sense to focus on recommendation systems rather than generative artificial intelligence alone. This is because recommendation systems are mainly designed to guide users' decision-making by suggesting products, services, or behaviors based on their profiles, preferences, and usage history (Kanwal & Amjad, 2024). This ability to personalize is particularly relevant in the context of sustainability, as it allows sustainable alternatives to be presented in a targeted manner tailored to the consumer's profile, increasing the likelihood of these choices being adopted.

Generative artificial intelligence, on the other hand, although useful in complementing this process by explaining and contextualizing the impact of choices, does not focus directly on the task of selecting and prioritizing options. Thus, recommendation systems are the most appropriate approach, as they allow for the practical operationalization of the connection between the user and sustainable options, while generative AI can be considered a complementary resource, more focused on communication and emotional engagement.



2.2 SUSTAINABILITY AND INTENTION TO PURCHASE

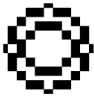
Environmental sustainability refers to the need to preserve the viability and diversity of natural systems in order to ensure that future generations can enjoy environmental conditions that are equal to or better than those enjoyed by current generations (Kuhlman & Farrington, 2010). Given this, examining how consumers make purchasing decisions in line with environmental sustainability becomes essential, as these decisions collectively shape sustainable outcomes.

Purchase intention refers to consumers' willingness to purchase a product or service based on favorable attitudes and evaluations toward it (Wong, 2021). In marketing studies, purchase intention is often measured by indicators like willingness to pay more for a product, likelihood to recommend a brand, or stated preference over alternatives (Wong, 2021). Thus, purchase intention is a relevant predictor of actual behavior, being influenced by individual factors (values, perceptions, beliefs), social factors (peer pressure, cultural trends), and contextual factors (price, availability, brand trust).

Consumer behavior regarding sustainability has been extensively studied and identified as a result of the interaction between individual, social, and contextual factors. A study conducted in Slovenia showed that personal values, social norms, and moral beliefs have a direct impact on sustainable behavior, while environmental awareness mainly influences it indirectly, through the mediation of attitudes and intentions (Krsnik & Erjavec, 2024).

Similarly, the literature points to the importance of environmental knowledge as a predictor of the adoption of sustainable consumption practices. Research by Dimitrova et al. (2022) showed that both internal factors, like individual attitudes and beliefs, and external factors, like public policies and promotional campaigns, have significant effects on green consumption intentions, subsequently influencing actual behavior.

In the context of marketing, studies have revealed that communication and sustainable positioning strategies can reinforce consumers' ecological awareness,



leading to an increase in responsible purchasing behaviors. According to Zhuang et al. (2023), sustainable marketing plays a crucial role in shaping consumer perception and promoting practices more aligned with environmental concerns. A study conducted by Dai (2025) highlights that consumers' perceptions of corporate social responsibility significantly influence their purchasing intentions, highlighting the importance of environmental perceptions in consumer purchasing decisions.

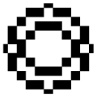
Recently, artificial intelligence (AI)-based technology has been identified as a significant facilitator of more sustainable consumption behaviors. Research conducted with users of the Ant Forest app in China has shown that technological stimuli provided by AI, such as gamification and interactive features, increase the value perceived by consumers and promote greater adherence to sustainable practices, with perceived emotional value being more decisive than social value (Cao & Liu, 2023). Complementarily, studies in the context of digital marketing show that AI tools can improve consumer engagement and support sustainable consumption decisions, especially when combined with personalization, sentiment analysis, and campaign automation. In these cases, factors like perceived benefit, trust, and transparency are crucial for AI to be accepted and effective in promoting green behaviors (Acatrinei et al., 2025).

H1: Sustainable recommendations based on artificial intelligence have a positive impact on consumers' purchase intent, increasing the likelihood of choosing environmentally responsible products.

2.3 SUBJECTIVE WELL BEING

Recent studies show that subjective wellbeing (SWB) is influenced by everyday behaviors, including more sustainable or healthy consumption choices, as these can reinforce personal values, sense of purpose, and social connection (García-Rodríguez, 2025).

Sustainable consumption choices, such as opting for eco-friendly products or reducing waste, are associated with psychological processes linked to pro-environmental behavior and environmental responsibility (Gifford, 2014).



Similarly, healthier consumption habits, including adopting balanced diets or increasing fruit and vegetable intake, have been linked to higher levels of energy, positive mood, and perceived mental health, contributing to the consumer's overall well-being (Blanchflower et al., 2013).

Furthermore, research indicates that the perception of consistency between behaviors and personal values reinforces self-efficacy and self-esteem, mediating the positive effect of sustainable and healthy choices on SWB (White et al., 2020). This effect is even more evident when such choices are part of a lifestyle consistent with social or environmental concerns, reinforcing the idea that behaviors aligned with internal values promote more positive affective experiences (Huta & Ryan, 2010).

Additionally, recent studies explore the role of artificial intelligence (AI) in promoting subjective well-being. Research by Zhang et al. (2024) suggests that AI-based virtual assistants can foster relationships that resemble human interactions, promoting a sense of support and emotional connection.

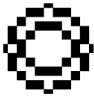
These interactions can positively influence users' SWB, especially when assistants are perceived as collaborative partners rather than purely technological tools.

Therefore, the current literature suggests that consumer choices that combine sustainability and health not only benefit the environment and physical health but also contribute significantly to consumers' subjective well-being, strengthening feelings of satisfaction, purpose, and connection to personal values (Diener & Larsen, 2009; Gifford, 2014; Blanchflower et al., 2013; White et al., 2020).

H2: Sustainable recommendations based on artificial intelligence have a positive impact on consumers' subjective well-being by fostering environmentally responsible behaviors that boost personal satisfaction and alignment with individual values.

2.4 CONSUMER TRUST

Consumer trust is a fundamental construct in understanding decision-making processes in digital environments, particularly in contexts mediated by artificial intelligence. Trust can be defined as the willingness of a consumer to rely on a



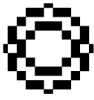
system, agent, or recommendation based on the belief that it is reliable, competent, and acts in the user's best interest (Zhang et al., 2020). In technology-driven settings, trust plays a critical role in reducing perceived uncertainty and risk, thereby facilitating acceptance and use of automated systems.

In the context of artificial intelligence, trust becomes even more relevant due to the opaque and complex nature of algorithmic decision-making. Unlike traditional human interactions, AI systems often operate as "black boxes," making it difficult for users to fully understand how recommendations are generated. As a result, consumers must rely on perceived credibility, transparency, and consistency to evaluate whether to trust these systems (Acatrinei et al., 2025). Prior research indicates that when AI systems are perceived as trustworthy, users are more likely to accept their recommendations and incorporate them into their decision-making processes.

Trust has been widely recognized as a key determinant of consumer behavior, particularly in online and digital environments. Studies show that higher levels of trust lead to increased willingness to rely on recommendations, stronger purchase intentions, and greater engagement with digital platforms (Zhang et al., 2020). In the context of AI-based recommendations, trust reduces skepticism and perceived risk, enabling consumers to feel more confident in following suggested options.

Furthermore, trust is not only associated with behavioral outcomes but also with consumers' psychological experiences. When individuals perceive AI systems as reliable and supportive, they are more likely to experience a sense of ease, reduced cognitive effort, and greater satisfaction during the decision-making process. These factors contribute positively to subjective well-being, particularly in contexts where decisions are simplified and aligned with users' preferences (Zhang et al., 2024). Conversely, low levels of trust may lead to resistance, discomfort, or uncertainty, negatively affecting both decision-making and overall experience.

Importantly, the relationship between AI-based recommendations and consumer responses may be indirect, operating through trust as a mediating mechanism. The type of recommendation provided by AI—whether sustainability-oriented or based on traditional attributes—may influence how consumers perceive the system's



intentions, credibility, and usefulness. In turn, these perceptions shape trust, which then affects key outcomes such as purchase intention and subjective well-being.

H3a: Trust mediates the relationship between sustainable recommendations based on artificial intelligence and consumer purchase intent

H3b: Trust mediates the relationship between sustainable recommendations based on artificial intelligence and consumer subjective well-being

2.5 CONCEPTUAL MODEL

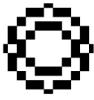
As shown below, the conceptual model was developed to examine how different types of AI-based recommendations (sustainable vs. non-sustainable) influence consumers' emotional, cognitive, and behavioral responses.

More specifically, this study investigates how AI-based recommendations affect purchase intention and subjective well-being through the mediating role of trust.

The conceptual model is grounded in prior research on artificial intelligence, sustainable consumer behavior, and decision-making in digital environments. It integrates insights from studies that highlight how AI-based recommendation systems influence consumer responses, particularly in terms of purchase intention and subjective well-being (Cao & Liu, 2023; Acatrinei et al., 2025). In this study, the type of AI recommendation (sustainable vs. non-sustainable) is conceptualized as the independent variable, while purchase intention and subjective well-being are considered the main outcome variables.

The model assumes that AI-based recommendations influence these outcomes indirectly through consumers' perceptions of trust. Specifically, trust is conceptualized as a mediating variable that explains how different types of recommendations shape consumers' responses by affecting their confidence in the AI system.

Trust reflects the extent to which consumers perceive AI-based systems as reliable, transparent, and aligned with their interests—factors that are critical for the acceptance and effectiveness of algorithmic recommendations (Zhang et al., 2020; Acatrinei et al., 2025). As such, higher levels of perceived trust are expected to increase consumers' willingness to rely on AI recommendations, thereby positively



influencing purchase intention and enhancing the overall decision-making experience.

In addition, environmental awareness is included as a control variable, as it captures consumers' sensitivity to environmental issues and may influence their responses to sustainability-oriented recommendations. Prior research suggests that individuals with higher environmental awareness are more likely to evaluate sustainable options positively and engage in pro-environmental behaviors (Krsnik & Erjavec, 2024; Dimitrova et al., 2022). Therefore, controlling for this variable allows for a more accurate assessment of the relationships proposed in the model.

Overall, the conceptual framework proposes that the effectiveness of AI-based recommendations depends not only on their content but also on the extent to which consumers perceive the system as trustworthy. In this sense, trust plays a central role in translating AI-driven recommendations into meaningful consumer outcomes, while environmental awareness is controlled to account for individual differences in sustainability orientation.

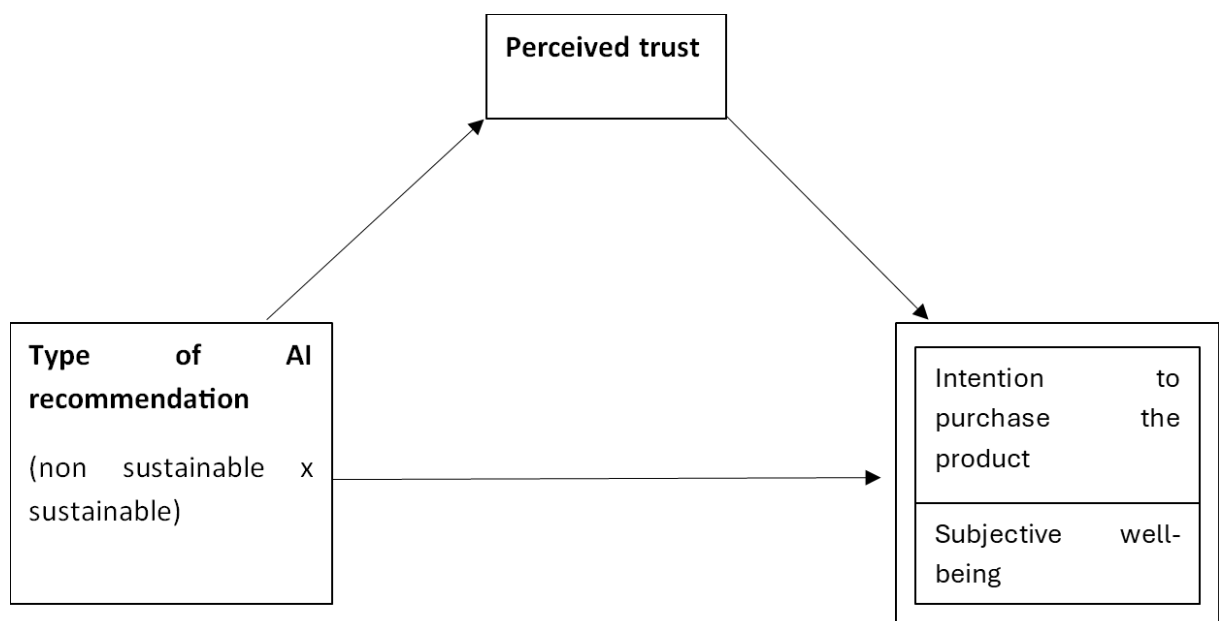
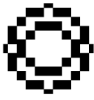


Figure 1- Conceptual model



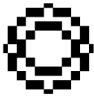
3. METHODOLOGY

3.1 RESEARCH DESIGN

Following the principles of quantitative methodology, this study adopts an experimental design to examine the effects of sustainable versus unsustainable AI recommendations on consumers' emotional reactions, purchase intentions, and subjective well-being. Although data is collected through an online questionnaire, the central methodological approach is experimental, as participants are randomly assigned to one of two conditions representing different types of AI recommendations (sustainable versus non-sustainable). This design allows for the manipulation of the independent variable and the assessment of causal relationships, which would not be possible through a survey-based approach alone.

The use of an online experiment is particularly suitable for studies involving technology-mediated decisions and sustainability communication, as it allows participants to interact with a controlled stimulus while capturing their self-reported attitudes, emotions, and behavioral intentions through structured questions. In this context, the experimental procedure provides a consistent way to evaluate how individuals react to AI-generated product recommendations and how these recommendations influence their emotional states and subsequent decision-making. After being exposed to the experimental scenario, participants completed a structured questionnaire that measures the main constructs included in the conceptual model, namely purchase intention, subjective well-being, and trust in AI recommendations. These constructs reflect the key behavioral and perceptual outcomes of the study, as well as the mediating mechanism through which AI-based recommendations are expected to influence consumer responses.

In the Sustainability & AI condition, the AI system was described as prioritizing environmental considerations. The recommended product was framed as being made from recycled materials, produced with a significantly reduced carbon footprint, and delivered using carbon-neutral logistics. The recommendation was explicitly positioned as supporting environmentally responsible consumption by minimizing environmental impact.



In the Traditional Approaches condition, the AI system was described as prioritizing conventional consumer decision-making factors. The recommended product was presented as a popular and best-selling model, emphasizing attributes such as affordability, customer ratings, comfort, and modern design. The recommendation was framed as helping consumers make practical and cost-effective purchasing decisions. In the sustainability condition, participants were presented with the following scenario:

Scenario 1

Imagine you are searching online for a pair of sneakers.

The e-commerce platform has an Artificial Intelligence tool that analyzed your preferences and selected a product that maximizes sustainability.

Based on environmental impact, energy consumption, and material durability, the AI recommends:

EcoStep Sneakers – Made from recycled materials, produced with a 40% reduction in carbon footprint and shipped with carbon-neutral delivery.

This recommendation was designed to **promote environmentally responsible choices by reducing environmental impact.**

Figure 2 - Scenario1

Scenario 2

Imagine you are searching online for a pair of sneakers.

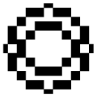
The e-commerce platform has an Artificial Intelligence tool that analyzed your preferences and selected a product that best matches traditional consumer priorities.

Based on price competitiveness, customer ratings, comfort, and popularity, the AI recommends:

UrbanFlex Sneakers – One of the best-selling models, known for its comfort, modern design, and good value for money.

This recommendation was designed to **help consumers make cost-effective and practical purchasing decisions.**

Figure 3- Scenario 2



These scenarios were designed to manipulate the type of AI recommendation by emphasizing either sustainability-related attributes or traditional consumption criteria.

Random assignment ensured that each participant was exposed to only one of the two recommendation frames, enabling a controlled comparison of how sustainability-oriented versus traditionally oriented AI recommendations affect consumer perceptions and behavioral intentions.

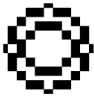
Overall, the use of a quantitative experimental design supported by a structured post-exposure questionnaire offers a rigorous methodological foundation for testing the hypothesized effects of AI recommendation type on consumer responses. It enables the systematic capture of causal impacts, supports internal validity, and aligns with prior research on sustainability communication, emotional responses, and AI-driven decision-support tools.

3.2 MEASUREMENT

To ensure the reliability and validity of the constructs included in the conceptual model, all variables were measured using previously validated scales adapted from the literature. Each construct was operationalized through multiple items, evaluated using a 7-point Likert scale ranging from 1 = “Completely disagree” to 7 = “Completely agree”, following the recommendations for behavioral and perception-based studies. The use of established scales supports comparability with prior research and supports the robustness of the subsequent statistical analyses.

All measurement scales were adapted from previously validated instruments, ensuring reliability, comparability with prior research, and alignment with best practices in quantitative research.

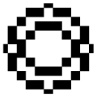
Additionally, environmental awareness was measured as a control variable to account for individual differences that may influence responses to AI recommendations, particularly in sustainability-related contexts. This variable was included at the end of the questionnaire, following standard methodological conventions.



The construct AI-based sustainable recommendations were measured using four items adapted from Zhang et al. (2020) and Acatrinei et al. (2025). These items capture users' perceptions regarding the usefulness, trustworthiness, relevance, and sustainability orientation of AI-generated recommendations.

Variable	Items	Reference
Manipulation check	1. This recommendation emphasizes environmental sustainability. 2. This recommendation seems environmentally responsible. 3. This recommendation is more sustainability-oriented than a typical recommendation.	Adapted from: previous sustainability perception scales
Purchase Intention	1. I am likely to purchase the sustainable products recommended by the AI. 2. I intend to choose sustainable options suggested by the AI. 3. I would recommend AI-suggested sustainable products to others.	Adapted from: Dodds, Monroe & Grewal (1991); Wong (2021)
Subjective well-being	1. This recommendation would make my shopping experience more satisfying. 2. This recommendation would make me feel better about my choice. 3. This recommendation would contribute positively to my overall shopping experience.	Adapted from: Diener et al. (1985)
Environmental Awareness	1. I consider environmental sustainability important when making purchasing decisions 2. I try to choose products that are environmentally friendly 3. Environmental impact influences my buying behavior. 4. I am willing to change my purchasing habits to reduce environmental impact.	Adapted from: Schlegelmilch, Bohlen & Diamantopoulos (1996)
Trust in AI Recommendation	1. I trust this AI recommendation 2. The AI seems reliable. 3. I feel confident following this recommendation.	Adapted from: Zhang et al. (2020); Acatrinei et al (2025)

Table 1 – Measurements and Scales



3.3 DATA COLLECTION

In this study, data were collected using a non-probabilistic convenience sampling method, which is commonly employed in quantitative research where the aim is to gather responses efficiently and from readily accessible participants. Convenience sampling was chosen due to its practicality, particularly considering the exploratory nature of the study and the need to obtain a reasonably sized sample within a limited time frame. This approach allows the researcher to reach individuals who are willing to participate and who possess relevant experiences with AI tools, sustainability-related behaviors, and well-being perceptions.

The data were collected through an online survey, distributed via open channels such as social media platforms (Instagram, WhatsApp, and LinkedIn) and through direct sharing among friends, colleagues, and acquaintances. These dissemination methods enabled broad and rapid outreach, particularly among individuals who are familiar with technology and therefore relevant to the study's focus on artificial intelligence. Participation was entirely voluntary, anonymous, and uncompensated.

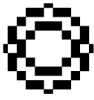
Prior to accessing the questionnaire, participants were informed about the study's objectives and ethical principles, including confidentiality and data protection. A screening question ensured that only individuals aged 18 or older could participate. Incomplete or inconsistent responses were removed to maintain data reliability.

By examining the relationship between the use of artificial intelligence and individuals' sustainable decision-making, this study may offer valuable insights for organizations and institutions aiming to promote environmentally responsible behaviors. Understanding how AI can guide consumers toward more sustainable choices provides companies with evidence to redesign or optimize digital tools, ensuring that sustainability-oriented recommendations genuinely support users' needs and motivations.

Furthermore, by incorporating Sustainable Behavior and Well-Being as core constructs in this research, the study contributes to clarifying how AI-driven guidance may: foster greater engagement in environmentally friendly actions and enhance individuals' perceived well-being by reducing cognitive effort and facilitating more meaningful, value-aligned decisions. These mediating mechanisms



help uncover the broader impact of AI on consumer lifestyles and highlight how digital technologies may support both sustainability goals and personal quality of life.



4. EMPIRICAL STUDY

4.1 Pre-test

Before initiating the data collection process, it was considered essential to conduct a pre-test of the research instrument. This stage allowed for the assessment of the clarity, coherence, and overall adequacy of the questionnaire/experiment, ensuring that all components were properly structured and easily understood by participants. The pre-test also enabled the identification and correction of minor flaws or ambiguities that could potentially compromise the quality of the responses. Importantly, it proved to be particularly valuable, as it revealed that the initial version of the questionnaire did not produce the intended effect, making it possible to implement the necessary adjustments before proceeding with the main study.

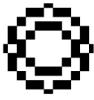
These responses were obtained through Qualtrics and a total of 37 participants were included in this sample; however, only 29 were considered valid.

After cleaning the data, we found that 56.8% of the respondents were women and 21.6% were men. In this case, the total percentage is 78.4%, as the missing responses were not considered valid for the study. Therefore, 100% would only have been achieved if all 37 responses had been valid, rather than including the 9 missing responses.

Regarding the experimental conditions, 15 participants were exposed to Scenario 1 (Sustainability and AI), while 14 participants viewed Scenario 2 (Traditional Approaches), with the average age being 49 years old ($SD = 16.927$).

Subsequently, we conducted independent-samples t-tests on the independent variables to ensure that participants correctly understood the differences between the presented scenarios. The following results were obtained.

The manipulation check was successful ($t = -2.57$, $p = 0.08$); therefore, we proceeded with the study until the required number of responses was obtained.



4.2. Study

This study aimed to examine how different AI-driven recommendation frames influence consumer perceptions and responses in an online shopping context. A total of 122 responses were collected. After applying data screening procedures (e.g., removal of incomplete questionnaires and responses that did not meet quality criteria), 111 responses were retained as valid and included in the final sample.

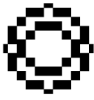
The survey was conducted using Qualtrics. Participants were randomly assigned to one of two experimental conditions in a between-subjects design: Sustainability & AI or Traditional Approaches. In both conditions, respondents were asked to imagine they were searching online for a pair of sneakers and receiving a recommendation generated by an Artificial Intelligence system embedded in the e-commerce platform.

4.3. Descriptive analysis

After the data cleaning process, a total of 111 valid responses were retained for the analysis. A frequency analysis indicated that 55 participants were assigned to the Sustainability & AI scenario, while the remaining 56 participants were exposed to the Traditional Approaches scenario. Regarding the demographic characteristics of the sample, the majority of respondents were female (55.9%), while the remaining participants were male. The ages of participants varied across a broad range, with a mean age of 38 years (SD = 17.063).

Concerning the control variables, the descriptive statistics revealed that environmental awareness presented a mean of 4.48 (SD = 2.161), indicating a moderate level of concern for environmental issues among participants. Additionally, trust in AI recommendations exhibited a mean of 4.40 (SD = 1.466), suggesting a moderate level of confidence in AI-based recommendations.

Before proceeding with the main analyses, a reliability analysis was conducted to assess the internal consistency of the measurement scales using Cronbach's alpha. The results indicated that all multi-item constructs demonstrated excellent reliability, exceeding the recommended threshold of 0.70 (Nunnally, 1978). Specifically, purchase intention showed a Cronbach's alpha of 0.965, trust in AI



recommendations presented an alpha of 0.956, and subjective well-being exhibited an alpha of 0.941.

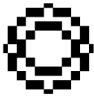
Environmental awareness, measured using two items, presented a lower Cronbach's alpha of 0.366. However, it is important to note that Cronbach's alpha tends to underestimate reliability in scales with a limited number of items. To further assess the relationship between the two items, a Pearson correlation analysis was conducted. The results revealed a weak but statistically significant positive correlation between the items ($r = .241$, $p = .011$).

Despite the relatively low internal consistency, environmental awareness was retained as a control variable in the subsequent analyses. This decision is justified by its theoretical and empirical relevance in influencing consumer responses, as well as by the fact that it is not a central construct in the conceptual model but rather a control variable.

Variables	Cronbach's Alpha
Purchase intention	0.965
Trust in AI recommendations	0.956
Subjective well-being	0.941
Environmental awareness	0.366

Table 2 Cronbach's Alpha Values

To assess the internal consistency of the measurement scales used in this study, Cronbach's alpha coefficients were calculated for each construct. The results indicate that all multi-item scales demonstrated acceptable to excellent levels of reliability, exceeding the recommended threshold of 0.70 (Hair et al., 2019). These findings confirm that the items used to measure each construct are internally consistent and suitable for further analysis.



Following the descriptive and frequency analyses, an independent-samples t-test was conducted to examine the effectiveness of the experimental manipulation. The results confirmed that the manipulation was successful ($t = 10.34$, $p = .001$). Participants exposed to the Sustainability & AI scenario reported significantly higher levels of sustainability-oriented considerations ($M = 6.42$, $SD = 1.222$) compared to those in the Traditional Approaches scenario ($M = 3.05$, $SD = 1.995$), indicating that the two experimental conditions were perceived differently by respondents.

Following the approach used in the previous analyses, we also examined whether environmental awareness should be considered as a control variable. To assess its relevance, a linear regression analysis was conducted in order to evaluate the potential effect of environmental awareness on the dependent variables.

The results indicated that environmental awareness was statistically significant and therefore it was included as a covariate in the subsequent analyses. This suggests that participants' level of environmental awareness may influence their responses regarding well-being and purchase intention.

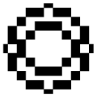
Although the regression model showed a limited overall effect ($F = 0.508$, $p = 0.478$, $\eta^2 = 0.05$), environmental awareness was retained as a covariate to control its potential influence in the following analyses.

4.4. MAIN EFFECT

To test H1 and H2, a multivariate analysis of variance (MANOVA) was conducted with purchase intention and subjective well-being as dependent variables, recommendation type as the independent variable, and environmental awareness as a covariate.

The multivariate results indicated that the effect of recommendation type on the combined dependent variables was not statistically significant, Wilks' Lambda = .996, $F(2, 107) = 0.230$, $p = .795$, $\eta^2 = .004$.

Regarding purchase intention, the results showed that the effect of recommendation type was not statistically significant, $F(1, 108) = 0.052$, $p = .820$, $\eta^2 = .000$. Participants in the Sustainability & AI condition ($M = 5.12$, $SD = 1.24$) reported slightly higher purchase intention compared to those in the Traditional condition (M



= 5.00, SD = 1.47); however, this difference was not statistically significant. Therefore, H1 was not supported.

Regarding subjective well-being, the results indicated that the effect of recommendation type was not statistically significant, $F(1,108) = 0.087$, $p = .769$, $\eta^2 = .001$. Participants in the Sustainability & AI condition ($M = 5.72$, $SD = 1.29$) reported slightly higher levels of well-being compared to those in the Traditional condition ($M = 5.42$, $SD = 1.32$); however, this difference was not statistically significant. Therefore, H2 was not supported.

Additionally, environmental awareness, included as a covariate, showed a significant effect on both purchase intention ($F(1,108) = 7.814$, $p = .006$, $\eta^2 = .067$) and subjective well-being ($F(1,108) = 15.130$, $p < .001$, $\eta^2 = .123$), highlighting its importance in shaping consumer responses.

4.5 MEDIATION ANALYSIS

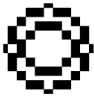
A mediation analysis was conducted using PROCESS Model 4 (Hayes, 2022) in order to examine whether trust mediates the relationship between the experimental scenario and purchase intention, while controlling for environmental awareness.

The results showed that the experimental condition did not significantly predict trust ($\beta = 0.182$, $p = .469$). However, environmental awareness had a significant positive effect on trust ($\beta = 0.286$, $p = .001$).

When predicting purchase intention, trust had a strong and significant positive effect ($\beta = 0.794$, $p < .001$), indicating that higher levels of trust are associated with higher purchase intention. In contrast, the direct effect of the experimental condition on purchase intention was not significant ($\beta = -0.086$, $p = .607$). Environmental awareness also did not significantly predict purchase intention ($\beta = 0.020$, $p = .733$).

The standardized indirect effect of the experimental condition on purchase intention through trust was not significant ($\beta = 0.145$, 95% CI $[-0.209, 0.503]$), as the confidence interval includes zero.

Overall, the results suggest that while trust is a significant predictor of purchase intention, the experimental condition does not significantly influence trust, indicating no evidence of a mediation effect.



5. RESULTS AND DISCUSSION

This study aimed to examine the impact of AI-based recommendation types (sustainability-oriented vs. traditional) on consumer responses, namely purchase intention and subjective well-being, as well as the mediating role of trust.

Overall, the findings indicate that the type of AI recommendation did not have a statistically significant effect on either purchase intention or subjective well-being. Although participants exposed to sustainability-oriented recommendations reported slightly higher levels of both outcomes compared to those in the traditional condition, these differences were not statistically significant. This suggests that simply framing recommendations as sustainable may not be enough to meaningfully influence consumer behavior or perceived well-being.

One possible explanation for these results is that consumers may place greater importance on functional attributes such as price, comfort, or familiarity, particularly in online shopping environments. This aligns with prior research showing that, despite expressing positive attitudes toward sustainability, consumers do not always translate these attitudes into actual behavior—a phenomenon commonly described as the attitude–behavior gap.

In contrast, trust in AI recommendations emerged as a key factor. The results showed that trust significantly predicts both purchase intention and subjective well-being, indicating that individuals who perceive AI recommendations as reliable and credible are more likely to respond positively. This finding is consistent with existing literature, which emphasizes the central role of trust in driving user acceptance and reliance on AI systems.

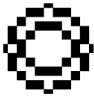
However, despite its strong direct effects, trust did not mediate the relationship between the type of AI recommendation and the outcome variables. In other words, while trust is clearly important in shaping consumer responses, the experimental manipulation (sustainable vs. traditional recommendations) did not significantly influence trust levels. As a result, no mediation effects were observed.

Furthermore, environmental awareness was found to play a significant role, positively influencing both trust and the dependent variables. This suggests that



consumers who are more environmentally conscious are more receptive to AI recommendations and tend to report higher purchase intention and well-being. These findings highlight the importance of individual differences when evaluating responses to sustainability-related interventions.

Taken together, the results suggest that promoting sustainability through AI recommendations alone may not be sufficient to drive meaningful changes in consumer behavior. Instead, strategies that focus on building trust in AI systems and targeting consumers with higher environmental awareness may prove more effective in encouraging sustainable consumption.



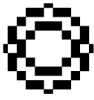
6. CONCLUSIONS

6.1 THEORETICAL IMPLICATIONS

This study contributes to the literature on sustainable consumption and AI-driven decision-making by offering a more critical perspective on the effectiveness of sustainability-oriented technological interventions. Contrary to prior research suggesting that AI can actively promote sustainable behavior through personalized recommendations (Acatrinei et al., 2025; Cao & Liu, 2023), the findings indicate that sustainability framing alone does not significantly influence either purchase intention or subjective well-being. This result challenges the assumption that exposure to sustainability cues, even when delivered through advanced technologies, is sufficient to alter consumer responses. From a theoretical standpoint, these findings reinforce and extend the attitude–behavior gap widely discussed in sustainability literature (Krsnik & Erjavec, 2024; Dimitrova et al., 2022). Specifically, this study suggests that the gap persists even in AI-mediated environments, where personalization and data-driven insights are expected to enhance decision-making. This implies that structural and psychological barriers—such as habits, perceived trade-offs, or lack of intrinsic motivation—may override the influence of sustainability-oriented recommendations.

Moreover, the results highlight the central role of trust as a key mechanism in human–AI interaction. Consistent with prior studies (Zhang et al., 2020; Acatrinei et al., 2025), trust emerged as a significant predictor of purchase intention, suggesting that consumers are more likely to act on AI recommendations when they perceive the system as reliable and credible. This finding contributes to the growing body of research on algorithmic trust by positioning it as a prerequisite for behavioral influence, potentially more impactful than the content of the recommendation itself.

In addition, the absence of a significant effect on subjective well-being provides a relevant contribution to well-being literature. While previous research suggests that sustainable behaviors can enhance well-being through value alignment (Gifford, 2014; Diener & Larsen, 2009), the current findings indicate that externally prompted sustainable choices—such as those suggested by AI—may not generate the same psychological benefits. This suggests that intrinsic motivation and personal



engagement may be necessary conditions for sustainability to translate into well-being outcomes.

Overall, this study advances theory by integrating AI, sustainability, and consumer psychology, demonstrating that the effectiveness of AI in promoting sustainable consumption depends less on the presence of sustainability cues and more on underlying psychological mechanisms, particularly trust and individual predispositions.

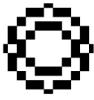
6.2 MANAGERIAL IMPLICATIONS

The findings of this study provide relevant insights for managers and decision-makers seeking to leverage artificial intelligence as a tool to promote sustainable consumption.

First, the results indicate that simply embedding sustainability attributes into AI recommendations is not sufficient to significantly influence consumer behavior. Therefore, companies should move beyond a purely sustainability-focused communication strategy and adopt a more integrated value approach, where sustainability is combined with key decision-making factors such as price, quality, convenience, and product performance. This suggests that sustainability should be positioned as an added value rather than the primary driver of choice.

Second, the importance of trust highlights the need for organizations to design AI systems that are transparent, explainable, and user oriented. Managers should prioritize features that enhance perceived credibility, such as providing clear explanations for recommendations, ensuring consistency in outputs, and allowing users to maintain a sense of control over the decision process. Building trust in AI systems is essential not only for increasing adoption but also for improving their effectiveness in influencing behavior.

Third, the significant role of environmental awareness suggests that a segmentation strategy is critical. Companies should identify consumers with higher levels of environmental concern and tailor AI-driven recommendations accordingly. For these segments, sustainability messaging may be more effective, while for less



environmentally engaged consumers, hybrid strategies combining functional and sustainability benefits may be required.

Additionally, firms should explore ways to enhance the emotional and experiential dimensions of AI interactions. Since sustainability alone does not significantly impact well-being, integrating elements such as personalization, gamification, or interactive feedback may increase engagement and improve the overall consumer experience.

Finally, these findings emphasize that the successful implementation of AI in marketing requires a consumer-centric approach, where technological capabilities are aligned with user expectations, perceptions, and decision-making processes. Organizations should therefore focus not only on what AI recommends, but also on how these recommendations are perceived and experienced by consumers.

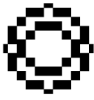
6.3 LIMITATIONS AND FUTURE RESEARCH

Despite its contributions, this study presents several limitations that open avenues for future research.

First, the use of a convenience sampling method limits the generalizability of the findings. The sample may not be representative of the broader population, particularly in terms of cultural background, digital literacy, or environmental attitudes. Future research should adopt more robust sampling techniques to improve external validity and allow for cross-cultural comparisons.

Second, the study relies on self-reported measures, which may be subject to biases such as social desirability or overestimation of sustainable intentions. Although purchase intention is a widely accepted proxy, it does not necessarily translate into actual behavior. Future studies should incorporate behavioral data, such as real purchase decisions or experimental field studies, to provide a more accurate assessment of consumer responses.

Third, the experimental context was limited to a single product category and a relatively simple scenario. Consumer responses may vary depending on product type, level of involvement, or perceived trade-offs between sustainability and



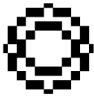
functionality. Future research should explore different contexts, including high-involvement products or services, to assess the robustness of the findings.

Another limitation relates to the simplicity of the AI interaction. The study does not fully capture the complexity of real-world AI systems, which often involve dynamic, conversational, and adaptive interfaces. Future research could investigate more advanced forms of interaction, such as conversational agents or emotion-aware AI, to better understand how different design features influence consumer perceptions and behavior.

Furthermore, while this study considered trust and environmental awareness, other relevant variables—such as perceived risk, perceived autonomy, or skepticism toward AI—were not included. Prior research has shown that perceived risk is a key determinant of technology adoption and significantly influences consumer decision-making in digital environments (Featherman & Pavlou, 2003). In addition, perceived autonomy has been widely associated with user motivation and engagement in human–technology interactions (Deci & Ryan, 2000). More recently, skepticism toward AI has been identified as an important factor shaping consumer trust and reliance on algorithmic recommendations, with individuals often showing resistance to AI-driven decisions compared to human advice (Longoni et al., 2019). Expanding the conceptual model to incorporate these factors would provide a more comprehensive understanding of consumer responses.

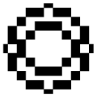
Finally, future research could adopt a longitudinal perspective to examine how repeated exposure to AI recommendations influences behavior and well-being overtime. This would allow for the analysis of learning effects, habit formation, and long-term acceptance of AI systems.

In conclusion, addressing these limitations will contribute to a deeper understanding of how artificial intelligence can effectively support sustainable consumption and enhance consumer experiences.

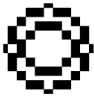


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ANNEX A (ETHICS COMMITTEE REPORT)



This is to certify that

Project No.: **DDMKT2025-11-159632**

Project Title: **From Recommendations to Well-Being: The Influence of AI on Sustainable Consumer Decisions**

Principal Researcher: **Beatriz Gama**

according to the regulations of the Ethics Committee of NOVA IMS and MagIC Research Center this project was considered to meet the requirements of the NOVA IMS Internal Review Board, being considered **APPROVED** on 11/17/2025.

It is the Principal Researcher's responsibility to ensure that all researchers and stakeholders associated with this project are aware of the conditions of approval and which documents have been approved.

The Principal Researcher is required to notify the Ethics Committee, via amendment or progress report, of

- Any significant change to the project and the reason for that change;
- Any unforeseen events or unexpected developments that merit notification;
- The inability of the Principal Researcher to continue in that role or any other change in research personnel involved in the project.

Lisbon, 11/17/2025

NOVA IMS Ethics Committee
ethicscommittee@novaims.unl.pt

Data with Purpose.

