Customer Support for Sustainability:
The Empirical Analysis in Online Shopping Context

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KEYWORDS

ABSTRACT

This study investigates consumer support for sustainability within the online shopping context by integrating the Unified Theory of Acceptance and Use of Technology (UTAUT) framework with psychological factors such as Personal Innovativeness (PEI) and Sustainability Consciousness (SUC). The results reveal that Performance Expectancy (PEE), Effort Expectancy (EFE), Social Influence (SOI), Facilitating Conditions (FAC), PEI, and SUC significantly influence customer satisfaction, which mediates the relationship with consumer support for sustainability. The findings contribute to the theoretical understanding of how technological and psychological drivers jointly impact sustainable consumer behavior in e-commerce. From a managerial perspective, the study provides actionable insights for online retailers, emphasizing the need to enhance customer experience through intuitive platforms, robust facilitating conditions, and innovative sustainability features. Additionally, leveraging social influence and fostering sustainability awareness are critical strategies to build customer satisfaction and encourage active consumer support for green initiatives. These insights guide both academics and practitioners in advancing sustainable practices in the online shopping landscape.

1. Introduction

1.1. Background of the study

Sustainability in online shopping is an increasingly important topic as consumers and businesses alike seek to minimize their environmental impact. While the convenience of online shopping has transformed shopping habits, it has also introduced significant challenges related to carbon emissions, packaging waste, and resource consumption. Additionally, consumer behavior plays a pivotal role in shaping the sustainability landscape of online shopping. As consumers become increasingly aware of sustainable issues, their purchasing decisions can significantly influence corporate practices and market trends toward more sustainable options. Amazon has pledged to achieve net-zero carbon emissions by 2040, investing in renewable energy and efficient logistics to minimize their environmental impact (Green City Times, 2024). Brands like Eileen Fisher and H&M encourage customers to return old garments for recycling or

upcycling, promoting a circular economy where products are reused rather than discarded (Green City Times, 2024). Brands like Muji and Apple utilize minimalist design aesthetics in their e-commerce platforms, which not only enhances user experience but also reduces energy consumption associated with website loading times (Green City Times, 2024). Despite the increasing awareness and availability of sustainable products, many consumers still hesitate to make eco-friendly purchases. Approximately 16% of consumers in both the US and UK find sustainable products difficult to locate, which hampers their ability to shop sustainably and about 23% of Americans and 19% of Britons do not trust these claims, which can deter them from making purchases (Janice, 2022). Younger consumers (Gen Z) show more concern for sustainability but also exhibit skepticism regarding brand claims. For instance, 32% of 18-24-year-olds in the US refrain from purchasing sustainable products due to distrust in brands' honesty about their sustainability efforts (Janice, 2022). As the result, it is imperative to investigate factors influence the consumer support for sustainability.

Online shopping provides customers with more convenient and accessible methods to find and purchase a wider variety of products compared to traditional shopping. It has become an increasingly prevalent mode of retail in recent decades, with significant implications for sustainability (Jalil et al., 2024). However, the existing literature reveals several key research gaps in this domain that warrant further investigation. First, there is the lack of understanding of the drivers on sustainable consumption choices in online shopping (Khan et al., 2023). While studies have shown that product attributes and eco-labelled can increase sustainable consumption, the drivers of sustainable consumption or support of customer for sustainability in online shopping is not well understood. There is a need to explore which factors can influence consumers' sustainable consumption and supporting for sustainability in online shopping context. Second, there is the difference in consumer behavior and preferences between multichannel and in-store shopping. Studies have shown that consumers may exhibit different behaviors and preferences when shopping online versus in physical stores (Alexander & Kent, 2022). However, more research is needed to understand the specific factors that drive these differences and how they can be leveraged to promote sustainable consumption in online shopping. Additionally, there is a need for more research on the role of psychological factors in driving sustainable competitive advantage in online shopping. While studies have shown that psychological factors can influence customer satisfaction and loyalty, the specific mechanisms by which customer experience can contribute to sustainable competitive advantage in online shopping are not well understood. As the

results, there is a need to explore how online retailers can differentiate their customer's psychological factors to promote sustainable consumption and customer's support for sustainability.

The study aims to fill the above-mentioned research gaps by using the Unified Theory of Acceptance and Use of Technology (UTAUT) and psychological factors to investigate customer support for sustainability in online shopping provides a comprehensive understanding of both external and internal drivers. UTAUT is highly relevant in this context as it examines how performance expectancy, effort expectancy, social influence, and facilitating conditions shape consumer support of sustainable practices enabled by technology, such as eco-friendly packaging, carbon-neutral delivery, and digital product labels. Meanwhile, psychological factors like and sustainability consciousness delve into intrinsic motivations, attitudes, and values that drive consumer behavior (Molinillo et al., 2023). Personal innovativeness influences the willingness to adopt novel eco-friendly features, while sustainability consciousness fosters long-term support for green initiatives. Integrating these perspectives offers a holistic view: UTAUT identifies external enablers, while psychological factors explain the internal motivations that sustain behavior over time. This dual approach helps online retailers design user-friendly, sustainability-focused platforms, tailor marketing strategies to align with consumer values, and develop policies that encourage widespread support of sustainability practices.

1.2. Research Questions and objectives

To fill this gap, the research aims to investigate consumer support of sustainability in online shopping context to answer the research question: what are factors that influence customer satisfaction subsequently affect consumer support of sustainability?

2. Material and Methodology

This section is to review A Unified Theory of technology acceptance and use Technology Acceptance (UTAUT) and concept of customer's support for sustainability. The proposed research methods and models are also captured in the pieces of literature which include hypotheses and relations between attributes.

2.1. Unified Theory of technology acceptance and use Technology Acceptance (UTAUT)

In the context of online shopping, researchers have found that UTAUT constructs such as performance expectancy, effort expectancy, and social influence are significant predictors of consumers' intentions to

shop online (Erjavec & Manfreda, 2022; San Martín & Herrero, 2012). For example, Erjavec & Manfreda (2022) found that social influence, are important factors in predicting online shopping behavior. Additionally, San Martín & Herrero (2012) emphasized the importance of government support and regulations in facilitating the development of the online shopping market, which is related to the facilitating conditions construct of UTAUT.

Furthermore, researchers have explored the integration UTAUT with other theories and models to better understand online shopping behavior. For instance, some studies have integrated TAM and UTAUT with the Theory of Planned Behavior (TPB) to examine the role of factors such as attitude, subjective norms, and perceived behavioral control in other contexts. Other studies have incorporated trust, risk, and other individual factors into UTAUT frameworks to provide a more comprehensive understanding of customer behavior (Arenas-Gaitán et al., 2015).

In the context of sustainability, the application of UTAUT in online shopping has important implications. The integration of the Unified Theory of Acceptance and Use of Technology (UTAUT) with psychological factors such as Personal Innovativeness (PEI) and Sustainability Consciousness (SUC) is based on the need to capture both technological and individual psychological determinants influencing consumer behavior in online shopping. UTAUT primarily explains technology acceptance through constructs like Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions. However, consumer behavior in sustainable online shopping is influenced not only by technology adoption factors but also by individual traits and psychological motivations. Personal Innovativeness (PEI) reflects an individual's willingness to embrace new technologies, which is particularly relevant in digital commerce (Molinillo et al., 2023). Meanwhile, Sustainability Consciousness (SUC) captures the growing awareness and ethical considerations that drive sustainable consumption choices (Fröberg et al., 2023). Combining these factors with UTAUT allows for a more holistic understanding of consumer decision-making, particularly in sustainability-driven online shopping environments.

2.2. Consumer support for sustainability

Consumer support for sustainability refers to the willingness and engagement of consumers to adopt and practice sustainable consumption behaviors (Šálková et al., 2023). This includes making purchasing decisions, using products, and disposing of items in an environmentally-friendly and socially responsible manner (Yang et al., 2023). Research has shown that increasing consumer sustainability consciousness and awareness is crucial to promote

sustainable consumption behaviors. Consumers who are more knowledgeable about sustainability and its importance are more likely to engage in sustainable practices (Šálková et al., 2023). As the result, fostering consumer support for sustainability requires a multi-faceted approach that addresses both technological and psychological factors. Increasing awareness, aligning with consumer values, and making sustainable options accessible and attractive are all important strategies to promote sustainable consumption (Yang et al., 2023).

2.3. Hypotheses Development

Performance Expectancy (PEE) reflects the degree to which a consumer believes that using a platform or service will enhance their shopping experience (Venkatesh et al., 2016). In a sustainability-focused online shopping context, customers are more satisfied when platforms deliver value by providing eco-friendly options, such as green product recommendations or sustainable shipping choices, without compromising on quality or convenience (Rahman et al., 2023). For example, if a customer perceives that choosing sustainable products benefits both the environment and their shopping efficiency, their satisfaction increases. Therefore, this study proposes the hypothesis:

H1: Performance expectancy has a significantly positive relationship with customer satisfaction

Effort Expectancy (EFE) refers to the ease of using an online platform (Venkatesh et al., 2016). Customers are more satisfied when sustainability features, such as eco-friendly filters or clear information about green products, are easy to access and use (Niu et al., 2023). Simplified processes for supporting sustainability, like one-click donations to environmental causes or seamless recycling options, reduce the cognitive and physical effort required, enhancing customer satisfaction. Therefore, this study proposes the hypothesis:

H2: Effort expectancy has a significantly positive relationship with customer satisfaction

Social influence (SOI) captures the impact of societal norms, peer behavior, and social pressures on consumer decisions (L.-T. Nguyen et al., 2023). Customers are likely to feel more satisfied when they perceive that supporting sustainability aligns with societal expectations or garners approval from their social circles. Features such as visible badges for sustainable purchases or integration with social media to share eco-friendly actions reinforce the sense of belonging to a responsible community, thereby boosting satisfaction. Therefore, this study proposes the hypothesis:

H3: Social influence has a significantly positive relationship with customer satisfaction

Facilitating conditions (FAC) refer to the availability of resources and infrastructure that support

consumer goals (Owusu Kwateng et al., 2019). In the sustainability context, satisfaction increases when online shopping platforms provide clear, reliable mechanisms for supporting sustainability, such as carbon-offset programs, partnerships with green organizations, or accessible customer support for eco-friendly initiatives. For instance, if a platform offers well-structured sustainability policies and tools, customers feel more empowered and confident in their sustainable choices, enhancing satisfaction. Therefore, this study proposes the hypothesis:

H4: Facilitating conditions has a significantly positive relationship with customer satisfaction

Personal innovativeness (PEI) reflects an individual's willingness to embrace and experiment with new ideas, technologies, or practices (Molinillo et al., 2023). In the context of online shopping with sustainability features, consumers with high innovativeness are more open to exploring eco-friendly product options, engaging with green technologies like carbon calculators, or adopting novel delivery methods such as reusable packaging (San Martín & Herrero, 2012). Their inherent curiosity and adaptability make them more likely to appreciate and enjoy these innovations, leading to greater satisfaction. For example, an innovative consumer might derive satisfaction from using a platform that integrates augmented reality to highlight the environmental impact of different products, as it aligns with their interest in cutting-edge solutions. Therefore, this study proposes the hypothesis:

H5: Personal innovativeness has a significantly positive relationship with customer satisfaction

Sustainability consciousness (SUC) represents an individual's awareness, values, and concern for environmental and social issues (Fröberg et al., 2023). Consumers with high sustainability consciousness find satisfaction in shopping experiences that align with their ethical values and contribute to sustainability goals (Pei et al., 2020). Features such as transparent supply chains, certified eco-friendly products, and carbon-neutral shipping resonate with their commitment to responsible consumption. For instance, knowing that their purchase supports fair trade or reduces waste can evoke a sense of pride and fulfillment, enhancing their overall satisfaction. Therefore, this study proposes the hypothesis:

H6: Sustainability consciousness has a significantly positive relationship with customer satisfaction.

Satisfied customers are more likely to trust and remain loyal to platforms, particularly when these platforms integrate sustainable practices such as eco-friendly product options, green logistics, and transparent sustainability initiatives (Pei et al., 2020). This trust fosters a deeper commitment to supporting sustainability efforts, as consumers perceive the platform's values aligning with their own (Jalil et al., 2024). Furthermore, satisfaction derived from both functional benefits (e.g., ease of use) and emotional fulfillment (e.g., contributing to environmental and social causes) encourages consumers to engage in and advocate for sustainable practices. A positive shopping experience creates a feedback loop, where satisfied customers are motivated to continue supporting sustainability initiatives, share their experiences, and make consistent eco-conscious choices. In a competitive online marketplace, platforms prioritizing sustainability can differentiate themselves, leveraging customer satisfaction to build stronger consumer commitment to responsible commerce. Therefore, this study proposes the hypothesis:

H7: Customer satisfaction has a significantly positive relationship with customer support for sustainability.

2.4. Research model

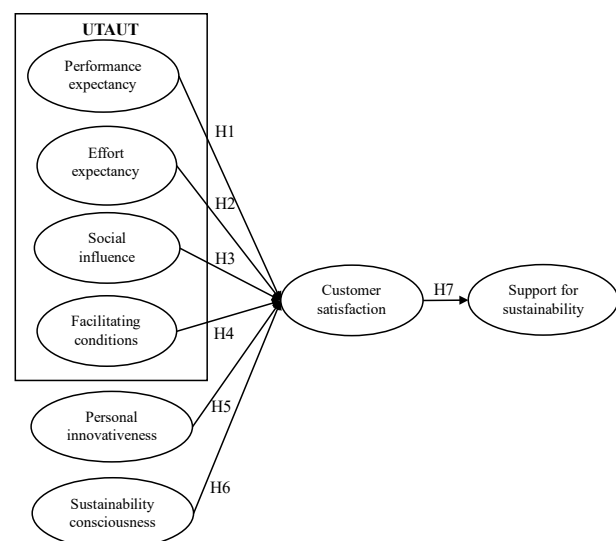The proposed research model is presented in Figure 1.

Figure 1. Proposed Conceptual Model

3. Results and Discussion

3.1. Research subjects

This study is quantitative research in order to test hypotheses by collecting data through large scale survey. Google Forms were used to distribute and collect responses from an online survey that had been publicized through various channels. As the PLS literature suggests, a sample size ten times the most complex relationship is required in a research model (Hair, 2009). Therefore, the minimum required sample size is 10 x 6 = 60. Additionally, the statistical software

Table 1. Demographic profile

Demographic Indication		Frequency (Total: 203)	Percentage
Gender	Male	102	50.25%
	Female	101	19.75%
Age	18-30 years' old	122	60.10%
	30-50 years' old	58	28.57%
	More than 50 years old	23	11.33%
Current Occupation	Student/College	88	43.35%
	Working	115	56.65%
Use online shopping	Less than a year	23	11.33%
	1 year-3 years	107	52.71%
	More than 3 years	73	35.96%

G*Power version 3.1 recommends a minimum sample size of 103 for an effect size of f2 = 0.15, a probability of error of = 0.05, a power level of (1- β) = 0.80, and a number of predictors of 7 (Nguyen et al., 2023). The final sample size was 203, well above the required minimum.

This study employs PLS-SEM (Partial Least Squares Structural Equation Modeling) using SmartPLS to analyze the relationships between latent variables. PLS-SEM is particularly suitable for this research due to its ability to handle complex models with multiple constructs, especially in exploratory studies focusing on behavioral and psychological factors (Dang et al., 2025). Unlike CB-SEM (Covariance-Based SEM), PLS-SEM is advantageous when dealing with non-normal data distributions, small to medium sample sizes, and predictive modeling, making it a robust choice for examining online shopping behaviors (Tan & Ooi, 2018). By employing SmartPLS, the study ensures methodological rigor while maintaining flexibility in exploring theoretical relationships in consumer behavior. Given its widespread application in technology adoption and behavioral research, PLS-SEM is an appropriate analytical technique for uncovering insights into the factors influencing online shopping behaviors in Ho Chi Minh City.

To validate the measurement structure, we utilized question statements from previous research, making minor adjustments to align with the social commerce context. The measurement of performance expectancy, effort expectancy, social influence, and facilitatiting conditions were adopted from the work of Taheri et al. (2024). Personal innovativeness was sourced from Molinillo et al. (2023), whereas sustainability consciousness, customer satisfaction and customer support for sustainability were derived from Chiu et al. (2019); Kleijnen et al. (2007); Peterson et al. (2021). Each measurement item was assessed using a 7-point Likert scale, with responses ranging from 1 ("completely disagree") to 7 ("completely agree")

to ensure consistency. This survey focuses on online shoppers in Ho Chi Minh City, a major economic hub in Vietnam with a diverse and dynamic consumer base. The city was chosen due to its high internet penetration, well-developed e-commerce infrastructure, and varied demographic composition, including individuals from different age groups, income levels, and educational backgrounds. To enhance the external validity of the study, efforts were made to ensure sample representativeness by capturing a broad spectrum of online shoppers. Table 1 provides a clear picture of the demographic composition, highlighting that most respondents are young adults (18–30 years old), a balanced gender distribution, a majority of working professionals, and a substantial portion with 1–3 years of online shopping experience.

3.2. Assessment of measurement model

In accordance with Hair (2017), the assessment of construct reliability and validity was conducted during the measurement model analysis. Composite reliability (CR), Cronbach's alpha, and Dijkstra-rho Henseler's (rh0_A) were assessed as measures of construct reliability. CR exceeding 0.7 signify a statistically significant level of reliability. Table 2 indicates that the CR, Cronbach's alpha values ranged from 0.700 to 0.930, surpassing the minimum threshold of 0.7 for both indices.

Convergent validity was assessed through the evaluation of individual factor loadings and the average variance extracted (AVE). Factor loadings typically need to surpass 0.7, while AVE values should exceed 0.5. In this study, all factor loadings exceeded 0.70, and the AVE values for constructs surpassed 0.5. The results validated convergent validity for all constructs. By comparing the square root of Average Variance Extracted (AVE) to the inter-construct correlation coefficients, the discriminant validity of the model was determined (L.-T. Nguyen et al., 2023). The results

Table 2. Assessment results of measurement model

Latent Construct	Items	Outer Loading	Cronbach's alpha	Composite Reliability	Average Variance Extracted (AVE)
SFS	SFS1	0.736	0.834	0.890	0.670
	SFS2	0.854			
	SFS3	0.849			
	SFS4	0.829			
CSS	CSS1	0.887	0.816	0.891	0.732
	CSS2	0.828			
	CSS3	0.850			
SUC	SUC1	0.781	0.870	0.909	0.714
	SUC2	0.842			
	SUC3	0.878			
	SUC4	0.874			
PEI	PEI1	0.880	0.842	0.904	0.759
	PEI2	0.881			
	PEI3	0.853			
FAC	FAC1	0.715	0.897	0.930	0.769
	FAC2	0.943			
	FAC3	0.922			
	FAC4	0.908			
SOI	SOI1	0.733	0.700	0.829	0.617
	SOI2	0.805			
	SOI3	0.817			
EFE	EFE1	0.818	0.733	0.844	0.643
	EFE2	0.793			
	EFE3	0.795			
PEE	PEE1	0.812	0.807	0.885	0.721
	PEE2	0.852			
	PEE3	0.882			

Table 3. Fornell-Larcker Criterion

	SFS	CSS	SUC	PEI	FAC	SOI	EFE	PEE
SFS	0.818							
CSS	0.618	0.855						
SUC	0.338	0.421	0.845					
PEI	0.307	0.432	0.322	0.871				
FAC	0.645	0.608	0.389	0.400	0.877			
SOI	0.463	0.556	0.447	0.294	0.519	0.786		
EFE	0.501	0.532	0.305	0.595	0.676	0.379	0.802	
PEE	0.238	0.357	0.276	0.673	0.354	0.176	0.570	0.849

presented in Table 3 indicate that the square root of the AVEs for factors is more significant than their respective correlation coefficients, respectively. This finding suggests that the model's discriminant validity is adequate.

3.3. Inspecting the inner structural model

Prior to validating the proposed hypotheses, the authors addressed the issue of multicollinearity through a collinearity assessment. The VIF results for all structures

Table 4. Outcome of the structural model examination

	PLS Path	Original sample (O)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Remark
H1	PEE -> CSS	0.356	0.077	5.634	0.000	Supported
H2	EFE -> CSS	0.282	0.065	5.302	0.000	Supported
H3	SOI -> CSS	0.583	0.064	9.092	0.000	Supported
H4	FAC -> CSS	0.483	0.075	6.463	0.000	Supported
H5	PEI-> CSS	0.237	0.080	4.962	0.000	Supported
H6	SUC-> CSS	0.162	0.061	4.675	0.000	Supported
H7	CSS -> SFS	0.357	0.074	5.813	0.000	Supported

range from 1.248 to 2.373, remaining below the threshold value of 3. Inferential statistics were derived using a bootstrapping method with 5,000 subsamples, no sign change, and 99 percent bias-corrected confidence intervals. The hypothesis testing results in Table 4 indicate that the variables PEE, EFE, SOI, FAC, PEI, and SUC have a significant impact on the variables CSS, as reflected by a p-value of less than 0.05. Consequently, hypotheses H1, H2, H3, H4, H5, and H6 have been validated. The path between CSS to SFS is statistically significant with p-values below 0.05, indicating strong support for the proposed relationships. Among them, SOI -> CSS (H3) exhibits the highest path coefficient (0.583), suggesting a particularly strong influence, while SUC -> CSS (H6) has the smallest path coefficient (0.162), indicating a relatively weaker but still significant effect. These results highlight the critical factors influencing customer satisfaction (CSS) and customer support for sustainability (SFS) in the given model.

4. Conclusion

The research aims to investigate consumer support of sustainability in online shopping context. The results show that PEE, EFE, SOI, FAC, PEI and SUC are the drivers of customer satisfaction and customer support for sustainability. The findings indicate that Social Influence (SOI, β = 0.583) is the strongest factor affecting consumer satisfaction, highlighting the critical role of peer opinions and societal norms in shaping online shopping experiences. Facilitating Conditions (FAC, β = 0.483) follow closely, emphasizing the importance of seamless platform functionality, payment systems, and customer support. Performance Expectancy (PEE, β = 0.356) and Effort Expectancy (EFE, β = 0.282) also significantly impact satisfaction, suggesting that consumers value convenience and ease of use. While Personal Innovativeness (PEI, β = 0.237) and Sustainability Consciousness (SUC, β = 0.162) have weaker effects, they remain relevant, indicating that innovation and eco-friendly practices can enhance satisfaction to some extent. Overall, businesses should prioritize social engagement, platform usability, and a hassle-free shopping experience to maximize consumer satisfaction. The results are in line with previous studies in different context (Abbagani, 2022; Fröberg et al., 2023; Islam et al., 2021; Jalil et al., 2024; Pei et al., 2020). This research significantly contributes to the growing body of literature on sustainability in the online shopping context by integrating the Unified Theory of Acceptance and Use of Technology (UTAUT) framework with psychological factors such as PEI and SUC. The findings highlight that not only technology-oriented constructs (PEE, EFE, SOI, FAC) but also individual psychological traits (PEI, SUC) play crucial roles in driving customer satisfaction (CSS) and consumer support for sustainability (SFS). This dual focus enriches existing theoretical models by bridging the gap between technological and psychological perspectives. Moreover, the study demonstrates that customer satisfaction serves as a mediating factor that links these drivers to sustainability support, offering a nuanced understanding of how satisfaction influences pro-sustainability behaviors in online shopping settings.

In term of managerial implications, online retailers should enhance customer experience by improving Performance Expectancy (PEE) through intuitive platforms, efficient delivery services, and reliable product information, while also addressing Effort Expectancy (EFE) with user-friendly interfaces and seamless navigation (Fröberg et al., 2023). Providing strong Facilitating Conditions (FAC), such as efficient customer support, secure payment systems, and accessible green options, further fosters satisfaction and loyalty. Leveraging Social Influence (SOI) by promoting user-generated content, reviews, and collaborations with influencers who advocate for sustainability can amplify consumer support (Pei et al., 2020). To appeal to consumers with high Personal Innovativeness (PEI), retailers should integrate innovative sustainability features like carbon footprint calculators and AI-driven eco-friendly recommendations. Additionally, engaging consumers through transparency about eco-friendly practices and leveraging Sustainability Consciousness (SUC) strengthens their alignment with sustainability values (Pei et al., 2020). Finally,

as customer satisfaction serves as a key mediator, delivering high-quality, consistent experiences that align with sustainable values motivates consumers to support green initiatives, such as eco-friendly delivery options and sustainable brand commitments.

While this study offers valuable insights into sustainable online shopping behavior, several limitations present opportunities for future research. First, the sample is geographically confined to Ho Chi Minh City, which may limit the generalizability of the findings to other regions and cultural contexts. Future research could conduct comparative studies across different regions to explore context-specific drivers of sustainability and assess the broader applicability of the findings. Second, this study focuses on specific technological (UTAUT) and psychological constructs, leaving room for further exploration of additional psychological and sociocultural factors that influence sustainable consumption. Future studies could examine variables such as environmental attitudes, perceived greenwashing, or brand loyalty to develop a more comprehensive understanding of consumer motivations. Third, the study relies primarily on self-reported data, which may be affected by social desirability bias. Future research could adopt longitudinal designs or experimental methods to capture actual behavioral changes over time and assess the long-term impact of sustainability initiatives by online retailers. By addressing these areas, future research can strengthen the theoretical and practical contributions of sustainable online shopping studies, offering deeper insights into the evolving dynamics of consumer behavior.

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