

DECODING GREENWASHING: THE INTERPLAY OF CONSUMER BEHAVIOR, CONSUMER KNOWLEDGE, AND SUSTAINABLE PURCHASING AMONG GENERATION Z

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Abstract:

Background: This study examines the impact of greenwashing on sustainable purchasing decisions among Generation Z, emphasizing the roles of consumer behavior and consumer knowledge. Given the increasing prevalence of misleading environmental claims, understanding how consumers respond to such tactics is crucial for fostering responsible consumption.

Purpose: The research aims to analyze how awareness of deceptive environmental claims influences purchasing choices and to determine the extent to which consumer knowledge can mitigate the negative effects of greenwashing.

Design/methodology/approach: This study employs a quantitative approach, collecting data from 180 Generation Z consumers in the Bandung Metropolitan Area. Hypothesis testing was conducted using Structural Equation Modeling-Partial Least Squares (SEM-PLS) to examine the relationships between greenwashing, consumer knowledge, and sustainable purchasing behavior.

Findings/Result: The results indicate that consumer knowledge positively influences sustainable purchasing behavior. Conversely, greenwashing negatively affects consumer trust and purchasing decisions, demonstrating the detrimental impact of deceptive sustainability claims.

Conclusion: The study highlights the importance of increasing consumer awareness and education on sustainability claims to prevent misleading practices. Businesses should adopt transparent sustainability practices, while policymakers should enforce stricter regulations to combat greenwashing.

Originality/value (State of the art): This research contributes to a deeper understanding of consumer responses to corporate sustainability claims, particularly within Generation Z. It provides valuable insights for businesses and policymakers on promoting responsible consumption and combating greenwashing. Additionally, the study suggests directions for future research, including exploring additional factors influencing sustainable purchasing decisions and broader demographic influences to enhance generalizability.

Keywords: consumer behavior, consumer knowledge, greenwashing, sustainable purchasing decisions, generation z

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INTRODUCTION

As the global community becomes increasingly conscious of environmental issues, the notion of green consumption has emerged as a prominent trend among consumers, particularly the younger generation known as Generation Z. Existing research suggests that Gen Z is more willing to pay a premium for eco-friendly products compared to other generations, indicating their heightened environmental awareness (Ham et al. 2022). Nonetheless, the degree to which Gen Z's environmental awareness manifests into actual sustainable purchasing behaviors remains a fascinating and multifaceted phenomenon deserving further scholarly examination.

This complexity is underscored by the persistent attitude-behavior gap, whereby consumers who express strong environmental concern do not consistently translate these concerns into actual purchasing behavior. Various factors contribute to this gap, including limited access to sustainable alternatives, higher product costs, and uncertainty regarding the credibility of sustainability claims. The proliferation of greenwashing practices where companies exaggerate or misrepresent their environmental commitments further complicates consumer decision-making, as it can undermine trust and create skepticism toward sustainability-oriented marketing. Such conditions are particularly salient for Generation Z, who, despite their digital savviness and strong value orientation toward authenticity, may face challenges in navigating a marketplace saturated with mixed signals about sustainability.

In this context, examining the interplay between consumer behavior, environmental knowledge, and perceptions of greenwashing becomes essential for understanding the mechanisms that drive or hinder sustainable purchasing. A deeper exploration of these dynamics not only enriches the academic discourse on sustainable consumption but also provides practical insights for businesses and policymakers seeking to align strategies with the sustainability values of Gen Z and foster genuine environmental responsibility.

One crucial factor that may influence Gen Z's sustainable purchasing decisions is their level of knowledge and understanding of greenwashing, a marketing practice where companies make misleading claims about the environmental benefits of their products or services (Y. T. H. Nguyen & Nguyen, 2020).

Gen Z is expected to critically assess greenwashing, influencing their sustainable purchasing decisions. With high awareness of greenwashing, they are more selective and likely to prefer genuinely eco-friendly products. As "digital natives," Gen Z leads the sustainability movement, showing greater environmental consciousness than previous generations and a willingness to pay a premium for eco-friendly products, particularly in China, where they are more receptive to green marketing and eco-labels (Song et al. 2020).

Gen Z's heightened environmental awareness and sustainable behavior stem from factors such as growing up in an era of environmental consciousness, exposure to social media campaigns, and greater access to information on environmental issues (Ham et al. 2022). However, environmental awareness alone does not ensure value-aligned purchases. Although Gen Z is willing to pay more for eco-friendly products, their ability to discern greenwashing is crucial in shaping sustainable purchasing behavior. Greenwashing can undermine consumer trust, fostering skepticism that may deter even environmentally conscious individuals from purchasing genuinely sustainable products.

Greenwashing undermines consumer trust and decreases purchase intentions for green products (Puspitasari & Alversia, 2023). Consumer knowledge and awareness are key drivers of sustainable consumption, especially among Gen Z, who are sustainability-oriented yet susceptible to misleading claims (Sanggramasari et al. 2024). Sustainable strategies, including design thinking, further shape responsible consumer behavior (Taryana et al. 2024). Collectively, these findings underscore the need to examine how behavior, knowledge, and greenwashing interact in shaping Gen Z's sustainable purchase decisions.

The existing literature highlights the intricate relationship between Gen Z's environmental awareness, greenwashing knowledge, and sustainable purchasing decisions. While greater greenwashing knowledge enhances their ability to identify genuine eco-friendly products, its impact is limited without corresponding environmental awareness. Despite growing attention to greenwashing and sustainable consumption, empirical studies that simultaneously examine consumer behavior, consumer knowledge, and greenwashing within an integrated structural model particularly among Generation Z remain limited.

This study examines the interplay between consumer behavior, environmental knowledge, greenwashing perceptions, and sustainable purchasing decisions among Generation Z. A comprehensive understanding of these variables is essential, as purchasing decisions are rarely shaped by a single determinant but rather emerge from the interaction of individual values, informational awareness, and contextual influences. Environmental knowledge equips consumers with the ability to critically evaluate sustainability claims, while perceptions of greenwashing highlight the risks posed by misleading practices that can erode trust and alter behavioral intentions. By integrating these dimensions, the study seeks to provide deeper insights into the mechanisms that encourage or inhibit eco-conscious consumption among Gen Z, thereby contributing both to theoretical advancements in sustainability research and to practical strategies for fostering genuine consumer responsibility.

The findings aim to enhance understanding of the factors shaping their consumption patterns and guide companies in developing marketing strategies that align with Gen Z's sustainability values while addressing greenwashing. In addition, this research is expected to contribute to the academic discourse on sustainable consumption by providing a nuanced examination of the mechanisms underlying eco-conscious decision-making. Such insights may inform both corporate practices and public policy, thereby fostering greater transparency, authenticity, and long-term commitment to sustainability.

METHODS

This study analyzes data from 180 Gen Z respondents located in the Bandung Metropolitan Area (Bandung Regency, West Bandung Regency, Sumedang Regency, along with the cities of Bandung and Cimahi). The research questionnaire used a 5-point Likert scale to measure various variables, namely consumer behavior, consumer knowledge, greenwashing, and sustainable purchasing decisions among Generation Z.

The dimensions of consumer behavior include emotions (EM), cognitive processes (CP), personality traits (PT), cultural influences (CI), social norms (SN), and market factors (MF). Consumer knowledge is measured through the dimensions of cross-cultural knowledge (CC), cross-national knowledge (CN),

and impulse buying knowledge (IB). Greenwashing consists of three dimensions: vague or misleading claims (VM), deceptive use of eco-labels (DL), and information obfuscation (IO). lastly, Sustainable purchase decisions among Generation Z consist of six dimensions, namely digital influence (DI), ethical awareness (EA), price consciousness (PC), social and peer influence (SP), resistance to greenwashing (RG), and family recommendations (FR). The dimensions applied in these variables are adapted and further developed from various previous studies. The consumer behavior dimensions are based on research by (Kassarjian, 1971), (Crouch, 2000), (Hemsley-Brown & Oplatka, 2016), and (Li & Cao, 2022). Consumer knowledge draw from studies by (Manrai & Manrai, 2001), (Vadakepat, 2013), and (Burton et al. 2019). Greenwashing dimensions are developed from the work of (Yang et al. 2020), (Kurpierz & Smith, 2020), and (Sagapova et al. 2022). For Sustainable purchase decisions among Generation Z, as developed by (Băltescu, 2019), (Kahawandala et al. 2020), and (Ayu Alfyya Fathinasari et al. 2023).

This study utilized an online questionnaire distributed between August and December 2024. A preliminary study was conducted beforehand to ensure the questionnaire's reliability and validity. Participant data confidentiality was maintained in accordance with academic ethical standards. The data was analyzed using Partial Least Squares (PLS) Structural Equation Modeling (SEM), a method commonly used in management and marketing research to handle complex relationships and non-normal data (Law & Fong, 2020).

The PLS-SEM method is advantageous for analyzing non-normal data, formative indicators, and complex models, although the required sample size varies with model complexity and statistical power. The research sample was selected based on their important role as consumers with high environmental awareness, as well as their potential contribution in identifying patterns of greenwashing. Furthermore, PLS-SEM is more focused on prediction and exploration rather than theory confirmation, which corresponds with the research objective of exploring the relationships between various constructs (Zeng et al. 2021). Table 1 presents the operational definitions and indicators of Customer Behavior (X1), Customer Knowledge (X2), Greenwashing (Y), and Sustainable Purchases Among Gen Z (Z).

Table 1. Operational variable of research constructs: consumer behavior, consumer knowledge, greenwashing, and sustainable purchase decisions among gen z

Variable	Code	Indicator
Consumer Behavior	EM	Feel happy and at ease when purchasing eco-friendly products.
	CP	Consider environmental impact and research eco-friendly claims before buying.
	PT	Consistently choose eco-friendly products due to personal values and lifestyle.
	CI	Cultural and family influences shape eco-friendly purchase decisions.
	SN	Social norms and peer influence encourage buying eco-friendly products.
	MF	Discounts, availability, and price competitiveness affect eco-friendly purchases.
Consumer Knowledge	CC	Awareness of sustainability from different cultural perspectives.
	CN	Understanding of global sustainability policies and product comparisons.
	IB	Ability to critically assess impulsive eco-friendly purchases.
Greenwashing	VM	Encounter vague and misleading eco-friendly claims.
	DL	Difficulty in distinguishing genuine and deceptive eco-labels.
	IO	Lack of transparency in sustainability information provided by brands.
Sustainable Purchase Decisions Among Gen Z	DI	Influence of social media and online reviews on eco-friendly purchases.
	EA	Ethical responsibility in choosing sustainable products and brands.
	PC	Price sensitivity when considering sustainable product purchases.
	SP	Impact of social and peer recommendations on sustainable buying behavior.
	RG	Critical evaluation of greenwashing before making a purchase.
	FR	Family recommendations as a factor in choosing eco-friendly products.

Consumer Behavior and Greenwashing

Research on consumer behavior highlights key factors influencing purchasing decisions, including price, quality, brand reputation, and environmental concerns. The growing prevalence of greenwashing has drawn significant attention, as studies indicate its negative impact, such as decreasing purchase intentions (Prabawani & Hadi, 2022) and fostering skepticism and distrust toward green products (T. T. H. Nguyen et al. 2019).

H₁: There is a positive relationship between consumer behavior and the perception of greenwashing among Generation Z.

This hypothesis explores the relationship between consumer behavior, particularly in evaluating environmental claims, and its influence on greenwashing practices. Generation Z's environmental concern-related behavior can affect greenwashing practices, with greater consumer awareness expected to enhance their influence on corporate greenwashing (Setiawan et al. 2022).

Consumer Behavior and Sustainable purchase decisions among Generation Z

Consumer behavior and sustainable purchasing decisions among Generation Z are shaped by psychological, social, and digital factors. Studies indicate that sustainability awareness, personal attitudes, and perceived consumer effectiveness drive eco-friendly buying habits (Hsg Phd et al. 2022), while social identity and peer influence are important in cultural contexts (Elgammal et al. 2024). Trust in environmental labels also affects purchasing decisions, as skepticism can hinder sustainable consumption (Kabaja et al. 2023). Gen Z's digital literacy leads them to rely on online platforms to research eco-friendly products (Grigoreva et al. 2021).

H₂: There is a positive relationship between consumer behavior and sustainable purchase decisions among Generation Z.

The hypothesis suggests that consumer behavior positively influences sustainable purchase decisions among Generation Z. Studies show that sustainability awareness, social influences, and trust in environmental labels drive eco-friendly buying habits (Hsg Phd et al. 2022), (Elgammal et al. 2024). Digital engagement further reinforces these choices (Grigoreva et al. 2021).

Consumer Knowledge and Greenwashing

Greenwashing refers to unverified or deceptive claims about a product, service, technology, or corporate practice to create a false impression of environmental responsibility. This tactic exploits consumer demand for eco-friendly products and often involves ambiguous language, incomplete disclosures, or misleading statements (Prabawani & Hadi, 2022). Research has examined that greenwashing fosters skepticism, erodes trust, and diminishes purchase intentions (Akturan, 2018). While it may offer short-term gains, greenwashing ultimately undermines consumer confidence in the green market. Increased consumer recognition of greenwashing reduces trust in environmental claims and lowers intentions to buy green products (Zhang et al. 2018), leading consumers to avoid brands engaged in deceptive practices.

H₃: There is a positive relationship between consumer knowledge and the perception of greenwashing among Generation Z

This hypothesis explores the impact of consumer knowledge on detecting greenwashing, particularly in environmental and sustainability issues. Higher knowledge levels among Generation Z enhance their ability to identify misleading environmental claims. Thus, consumer awareness plays a crucial role in mitigating the effects of greenwashing within this demographic (Tarabieh, 2021).

Consumer Knowledge and Sustainable purchase decisions among Generation Z

Consumer knowledge is crucial in shaping sustainable purchase decisions among Generation Z. Research shows that greater sustainability awareness positively influences attitudes and behaviors toward eco-friendly consumption (Hsg Phd et al. 2022) and enhances perceived product value, increasing purchasing intentions (Arora & Manchanda, 2022). However, limited awareness remains a barrier, highlighting the need for targeted education and marketing strategies (Jakubowska et al. 2024).

H₄: There is a positive relationship between consumer knowledge and sustainable purchase decisions among Generation Z.

The hypothesis positively that consumer knowledge positively influences sustainable purchasing decisions among Generation Z, with higher sustainability awareness directly shaping behavior. Research indicates that increased knowledge enhances attitudes, perceived value, and intentions toward eco-friendly products. (Hsg Phd et al. 2022) and encourages ethical consumption (Arora & Manchanda, 2022). However, limited knowledge remains a barrier, highlighting the need for targeted education and marketing efforts to foster informed decision-making (Jakubowska et al. 2024).

Greenwashing and Sustainable purchase decisions among Generation Z

As environmental awareness grows, consumers increasingly seek sustainable purchasing decisions (Schönherr & Pikkemaat, 2024). However, some companies employ greenwashing that mislead consumers. (Song et al. 2020). Generation Z, born between the mid-1990s and early 2010s, is characterized by strong environmental awareness. Studies highlight the influence of social pressure, social media, and the COVID-19 pandemic on their attitudes toward sustainable tourism, emphasizing climate-friendly travel, eco-conscious mobility, and waste reduction. (Schönherr & Pikkemaat, 2024).

H₅: There is a positive relationship between greenwashing and sustainable purchase decisions among Generation Z.

This hypothesis explores the impact of corporate greenwashing on Generation Z's sustainable purchasing decisions. Greenwashing undermines trust in green product claims, potentially discouraging consumers from purchasing sustainable products (Lin et al. 2021a).

The Mediating Role of Greenwashing in Generation Z's Sustainable Purchases

Consumer behavior plays a crucial role in sustainable purchasing decisions, with greenwashing serving as a key mediator among Generation Z. Recent studies emphasize its influence on their purchasing choices, shaping trust and engagement with sustainable products. (Zhang et al. 2018). Situated between millennials and Generation Alpha, Generation Z is a prime target for green marketing, given their strong environmental awareness and influence on household purchasing

decisions. (Song et al. 2020). Generation Z's attitudes are influenced by social pressure, social media, and the COVID-19 pandemic, driving their preference for climate-friendly travel and sustainability (Schönherr & Pikkemaat, 2024).

H₆: Consumer behavior has a relationship with sustainable purchasing decisions through the mediation of greenwashing among Generation Z.

This hypothesis proposes that consumer behavior influences sustainable purchasing decisions by shaping the ability to identify greenwashing. Generation Z consumers with strong pro-environmental behavior are more likely to scrutinize corporate claims, making them more sensitive to greenwashing detection. (Genoveva & Samukti, 2020). Thus, greenwashing identification mediates the relationship between pro-environmental behavior and purchasing decisions, as consumers more aware of greenwashing are likelier to choose genuinely sustainable products (Netto et al. 2020).

The Impact of Consumer Knowledge and Greenwashing on Gen Z's Sustainable Purchases

Consumer knowledge positively shapes sustainable purchasing decisions, particularly through the mediation of greenwashing among Generation Z. This generation, positioned between millennials and Generation Alpha, has become a focus of studies on environmentally sustainable tourism and consumption behaviors (Song et al. 2020). Research shows that Generation Z's environmental attitudes

are influenced by social pressure, social media, and the COVID-19 pandemic, driving them to prioritize climate-friendly travel, waste reduction, and social sustainability (Schönherr & Pikkemaat, 2024). However, the impact of greenwashing companies falsely portraying environmental responsibility on Generation Z's purchasing decisions is underexplored. Consumer knowledge of sustainability and corporate social responsibility claims can affect vulnerability to greenwashing.

H₇: Consumer knowledge has a relationship with sustainable purchasing decisions through the mediation of greenwashing among Generation Z.

This hypothesis assumes that consumer knowledge about sustainability influences sustainable purchasing decisions through the detection of greenwashing. Consumers with a deeper understanding of environmental issues are more sensitive in identifying greenwashing, which in turn influences their decisions to choose products that support sustainability (Netto et al. 2020). The mediating effect of greenwashing indicates that the more knowledgeable consumers are, the more likely they are to avoid products perceived as inauthentic in their environmental claims (Setiawan et al. 2022).

This research framework (Figure 1) connects Customer Behavior (X1) and Customer Knowledge (X2) with Greenwashing (Y) and its impact on Sustainable Purchases Among Gen Z (Z).

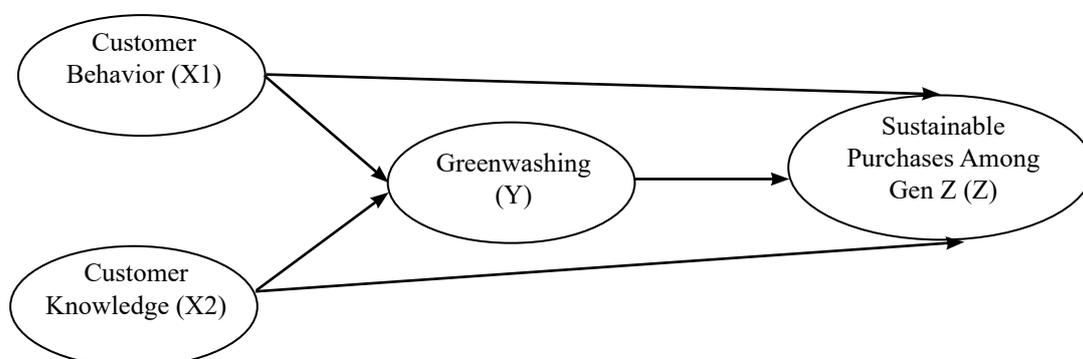


Figure 1. Framework of research constructs: consumer behavior, consumer knowledge, greenwashing, and sustainable purchase decisions among gen z

RESULTS

Respondent Profil

The survey results on Table 2, revealed that among the 180 selected respondents, the majority of respondents were in the 18-22 year age range, namely 72 respondents (40%), 52,8% were women. The majority of respondents (46,1%) had completed their education at the Bachelor level. Additionally, based on the respondents' place of residence, those from Bandung City represented the largest proportion, accounting for 21,1% of the sample. As many as 100% of respondents have purchased products that are claimed to be environmentally friendly.

Measurement Model

This section presents the measurement model (outer model) derived from the data analysis. Figure 2.

presents The measurement model in this research. The measurement model, plays a crucial role in PLS-SEM analysis by defining the relationships between latent variables and their respective indicators (Sharkasi & Rezakhah, 2023; Sinulingga et al. 2024).

Convergent Validity

Convergent validity in SmartPLS ensures that indicators measuring the same construct are highly correlated. To meet this criterion, three main conditions must be satisfied. First, the Average Variance Extracted (AVE) should be ≥ 0.50 , meaning that more than half of the variance in indicators is explained by the construct (Subhaktiyasa, 2024). Outer loadings should be ≥ 0.70 to ensure strong indicator-construct relationships, while Composite Reliability (CR) must be ≥ 0.70 to confirm internal consistency. Meeting these criteria establishes strong convergent validity, ensuring measurement accuracy in PLS-SEM analysis.

Table 2 Respodent profile of research constructs: consumer behavior, consumer knowledge, greenwashing, and sustainable purchase decisions among gen z

Criteria	Demographic	Frequency	Percentages
Age	< 18 years old	43	23,9%
	18-22 years old	72	40%
	23-26 years old	65	36,1%
Gender	Male	85	47,2%
	Female	95	52,8%
Educational Level	Senior High School	43	23,9%
	Diploma	40	22,2%
	Bachelor	83	46,1%
	Postgraduate	14	7,8%
Domicile	Bandung City	38	21,1%
	Bandung Regency	36	20%
	West Bandung Regency	34	18,9%
	Cimahi City	36	20%
	Sumedang Regency	36	20%
Experience of purchasing environmentally friendly products	Ever	180	100%
	Never	0	0%

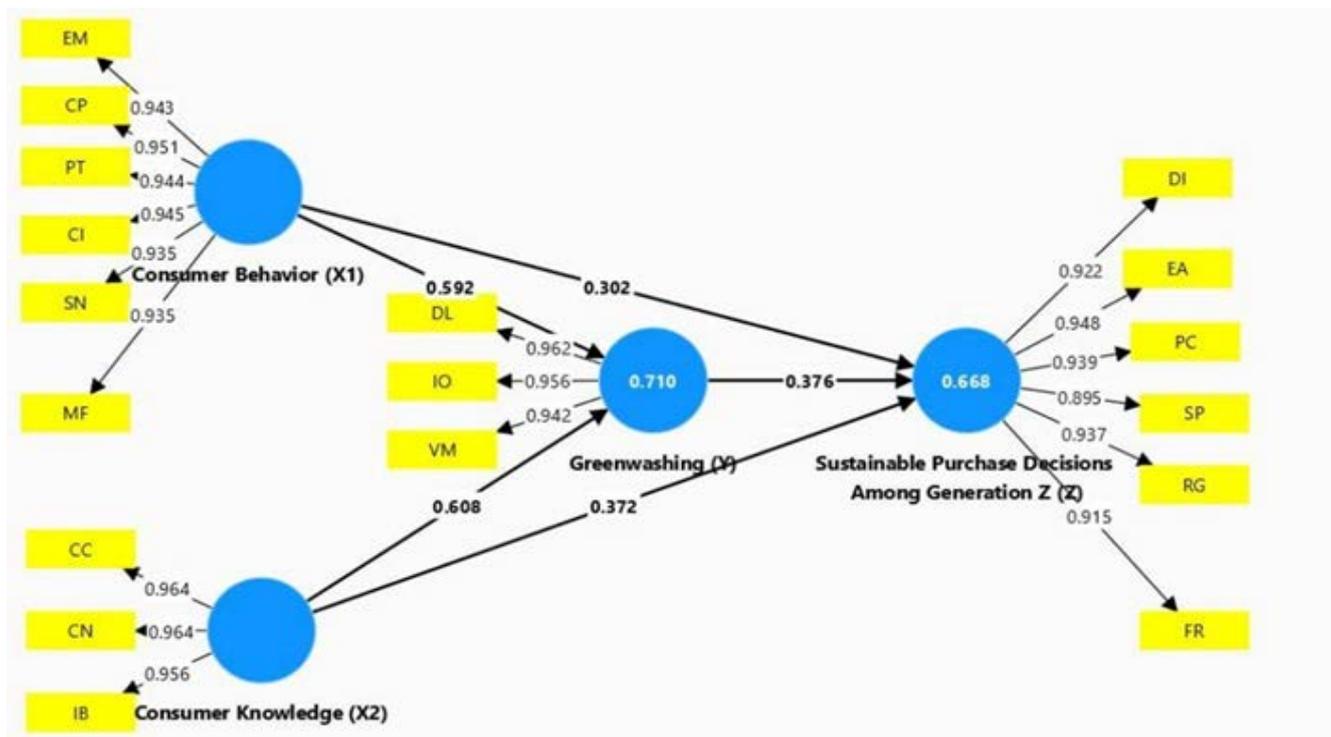


Figure 2. Measurement model: behavior, knowledge, greenwashing, and sustainable purchases among gen z

Based on Table 3, all statement items exhibit loading factor values greater than 0.70, signifying a strong correlation between each item and its respective construct. This confirms that all statement items meet the criteria for convergent validity, ensuring their reliability in measuring the intended variables.

Discriminant Validity

Discriminant validity using the Fornell-Larcker criterion ensures that a construct is distinct from others in a model. To establish discriminant validity, the square root of Average Variance Extracted (AVE) must be greater than the correlations between the construct and any other construct in the model. This approach is widely applied in PLS-SEM to verify construct distinctiveness (Subhaktiyasa, 2024).

Referring to the Table 4, it is evident that the square root of the AVE for each variable is greater than its correlations with other constructs. This indicates that each variable shares more variance with its own indicators than with any other construct in the model. Consequently, it can be concluded that all variables meet the criteria for discriminant validity, confirming

their distinctiveness and proper representation within the structural model.

Reliability

Reliability testing ensures that indicators within a construct consistently measure the intended variable. Three key parameters assess this reliability. Composite Reliability (CR) must be ≥ 0.70 , indicating strong internal consistency among indicators, while values ≥ 0.60 remain acceptable in exploratory research (Subhaktiyasa, 2024). Cronbach's Alpha should be ≥ 0.70 , though exploratory studies may accept ≥ 0.60 . Rho_A, an alternative reliability metric, requires ≥ 0.70 for construct stability. Meeting these criteria ensures high model reliability and consistent measurement. Referring to the Table 5, all variables have CR and Cronbach's Alpha values above 0.70, indicating strong internal consistency. This confirms that the constructs are robustness and accuracy.

Structural Model

This section presents the structural model (inner model) derived from the data analysis.

Table 3. Outer loadings of research constructs: consumer behavior, consumer knowledge, greenwashing, and sustainable purchase decisions among gen z

Dimensions	Consumer Behavior	Consumer Knowledge	Greenwashing	Sustainable purchase decisions among Generation Z
EM	0.943			
CP	0.951			
PT	0.944			
CI	0.945			
SN	0.935			
MF	0.935			
CC		0.964		
CN		0.964		
IB		0.956		
DL			0.962	
IO			0.956	
VM			0.942	
DI				0.922
EA				0.948
PC				0.939
SP				0.895
RG				0.937
FR				0.915

Table 4. Fornell-larcker criterion of constructs: consumer behavior, consumer knowledge, greenwashing, and sustainable purchase decisions among gen z

	Consumer Behavior	Consumer Knowledge	Greenwashing	Sustainable Purchase Decisions Among Generation Z
Consumer Behavior	0.942			
Consumer Knowledge	-0.014	0.961		
Greenwashing	0.583	0.600	0.953	
Sustainable Purchase Decisions Among Generation Z	0.516	0.594	0.776	0.926

Table 5. Construct reliability and validity of constructs: consumer behavior, consumer knowledge, greenwashing, and sustainable purchase decisions among gen z

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Consumer Behavior	0.975	0.957	0.979	0.888
Consumer Knowledge	0.959	0.960	0.973	0.924
Greenwashing	0.950	0.951	0.968	0.909
Sustainable Purchase Decisions Among Generation Z	0.967	0.967	0.973	0.858

R-Square

R-Square value measures a model's predictive power by quantifying variance in the dependent variable explained by independent variables. Higher R-Square indicates stronger explanatory power, but excessively high values may signal overfitting, requiring validation via Q-Square and f-Square analysis (Subhaktiyasa, 2024).

Referring to the Table 6, the adjusted R-Square is 0.707, indicating that Consumer Behavior and Consumer Knowledge explain 70.7% of its variance, demonstrating strong predictive power. For Sustainable Purchase Decisions Among Generation Z, the adjusted R-Square is 0.663, meaning Consumer Behavior, Consumer Knowledge, and Greenwashing account for 66.3% of its variance, classifying the model as moderate. These results confirm the model's predictive relevance and theoretical robustness.

Effect Size

Effect size (f^2) measures an independent variable's impact on a dependent variable, complementing R-Square analysis by assessing unique variance explained. Cohen (1988) classifies f^2 as strong (≥ 0.35), moderate (0.15), and small (0.02). Higher f^2 values indicate greater predictive importance, reinforcing the variable's role in the model. (Subhaktiyasa, 2024).

Based on Table 7, the findings reveal varying influences among consumer behavior, consumer knowledge, greenwashing, and sustainable purchase decisions in Generation Z. Consumer behavior strongly affects

greenwashing (1.210) but has a weak impact on sustainable purchases (0.124), suggesting other factors play a larger role. Consumer knowledge also strongly influences greenwashing (1.278) and has a moderate effect on sustainable purchases (0.184). Greenwashing itself has a weak influence on sustainable purchases (0.123), indicating it is not a primary determinant of Gen Z's buying behavior.

Hypothesis Testing

In SmartPLS, hypothesis testing uses T-Statistics and P-Values to assess variable relationships. A T-Value ≥ 1.96 indicates significance at 95% confidence, while ≥ 2.58 confirms 99% significance. $P \leq 0.05$ signifies significance at the 5% level, and $P \leq 0.01$ at 1%. If $P > 0.05$, the hypothesis lacks statistical support (Subhaktiyasa, 2024).

Based on Table 8, hypothesis testing confirms all proposed relationships as statistically significant (T-Statistics ≥ 1.96 , P-Values ≤ 0.05). These results validate the model, demonstrating that independent variables significantly influence dependent variables and providing strong empirical support for the theoretical framework.

Goodness of Fit (GOF)

Goodness of Fit (GOF) assesses model fit in PLS-SEM (Thaniedsa, 2022).

$$\begin{aligned} \text{GOF} &= \sqrt{(\text{average AVE} \times \text{average } R^2)} \\ \text{GOF} &= \sqrt{(0,895 \times 0,699)} \\ \text{GOF} &= 0.791 \end{aligned}$$

Table 6. R-Square of research constructs: greenwashing and sustainable purchases among gen z

	R-square	R-square adjusted
Greenwashing	0.710	0.707
Sustainable Purchase Decisions Among Generation Z	0.688	0.663

Table 7. f-square effect sizes for the structural model: the interplay of consumer behavior, consumer knowledge, greenwashing, and sustainable purchases among generation z

	Greenwashing	Sustainable Purchase Decisions Among Generation Z
Consumer Behavior	1.210	0.124
Consumer Knowledge	1.278	0.184
Greenwashing		0.123

Based on Table 9, GoF value is 0.791, indicating a strong model fit. This falls within the large GoF category, confirming that the measurement and structural components effectively capture variable relationships. Thus, the model is robust and well-suited for explaining the theoretical framework.

This study confirms significant relationships between consumer behavior, greenwashing, and sustainable purchasing decisions among Generation Z. Hypothesis testing yielded p-values of 0.000, supporting the acceptance of all hypothesis. Findings reveal that Generation Z's environmental concerns shape their behavior, influencing both greenwashing practices and

sustainable purchasing decisions. Increased consumer awareness enhances their ability to identify and challenge greenwashing, thereby reducing its impact on purchasing intent (Setiawan et al. 2022). Consumer knowledge, particularly regarding sustainability, plays a critical role in shaping eco-friendly buying habits, with greater awareness linked to stronger purchasing intentions (Arora & Manchanda, 2022). Greenwashing practices undermine trust in environmental claims, leading to skepticism and reduced support for affected brands (Akturan, 2018). Digital engagement and education strengthen sustainable consumption by providing information and enabling informed decisions (Grigoreva et al. 2021).

Table 8. Path coefficients of the structural model: decoding greenwashing through consumer behavior, consumer knowledge, and sustainable purchases among generation z

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics	P values	Result
Consumer Behavior (X1) → Greenwashing (Y)	0.592	0.592	0.048	12.407	0.000	Significant
Consumer Behavior (X1) → Sustainable Purchase Decisions Among Generation Z (Z)	0.302	0.301	0.071	4.268	0.000	Significant
Consumer Knowledge (X2) → Greenwashing (Y)	0.608	0.608	0.042	14.653	0.000	Significant
Consumer Knowledge (X2) → Sustainable Purchase Decisions Among Generation Z (Z)	0.372	0.371	0.069	5.382	0.000	Significant
Greenwashing (Y) → Sustainable Purchase Decisions Among Generation Z (Z)	0.376	0.377	0.079	4.775	0.000	Significant
Consumer Behavior (X1) → Greenwashing (Y) → Sustainable Purchase Decisions Among Generation Z (Z)	0.222	0.224	0.051	4.385	0.000	Significant
Consumer Knowledge (X2) → Greenwashing (Y) → Sustainable Purchase Decisions Among Generation Z (Z)	0.229	0.230	0.052	4.388	0.000	Significant

Table 9. Goodness of Fit (GoF) index of the structural model: decoding greenwashing, consumer behavior, consumer knowledge, and sustainable purchases among generation z

	AVE	R-square
Consumer Behavior (X1)	0.888	
Consumer Knowledge (X2)	0.924	
Greenwashing (Y)	0.909	0.710
Sustainable Purchase Decisions among Generation Z (Z)	0.858	0.688
Average	0.895	0.699

Moreover, this study highlights that greenwashing negatively impacts sustainable purchasing decisions, as consumer trust diminishes when deceptive claims are identified (Lin et al. 2021). The mediating role of greenwashing further demonstrates that consumers with pro-environmental behavior and greater knowledge are more likely to reject inauthentic environmental claims and opt for genuinely sustainable products (Netto et al. 2020) (Genoveva & Samukti, 2020). To promote sustainable consumption, businesses and policymakers must enhance transparency, foster consumer trust, and align marketing strategies with the values of Generation Z.

Managerial Implication

To promote sustainable purchasing among Generation Z, companies must adopt transparent, verifiable sustainability practices, including clear communication, authentic claims, and credible environmental certifications. Consumer education on greenwashing is essential for informed decision-making, while stricter regulations on corporate environmental claims can help prevent deceptive marketing. These measures collectively strengthen consumer trust, encourage corporate responsibility, and foster a culture of sustainability.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study highlights the importance of addressing greenwashing by examining its impact on Generation Z's sustainable purchasing decisions. Integrating consumer behavior and knowledge perspectives, it explores how greenwashing awareness shapes purchasing choices. Findings confirm a significant positive link between consumer knowledge and sustainable purchasing behavior, while also revealing that greenwashing erodes consumer trust and influences purchasing decisions negatively.

Recommendations

Future research should focus on incorporating additional variables not covered in this study and approach them from various scientific perspectives. A multidisciplinary framework will help provide a deeper understanding of the mechanisms through

which greenwashing influences consumer behavior. Moreover, exploring new dimensions of greenwashing awareness and refining existing measures will introduce novelty to research in this field. Expanding the population and sample size, potentially to a broader demographic or geographical scope, will further enhance the generalizability of findings, leading to more comprehensive policy recommendations for promoting sustainable consumption.

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