



Understanding of Greening Costs, Environmental Knowledge, and Generation Z's Willingness to Pay

Ujang Wildan^{1,*}, Abin Suarsa², Muhamadaree Waeno³

Universitas Muhammadiyah Bandung, Bandung, Indonesia^{1,2}, Fatoni University, Yarang, Thailand³

uwildan170@gmail.com¹, abinsuarsa@umbandung.ac.id², m.waeno@ftu.ac.th³

^{*}Corresponding author

Keywords:

Greening Cost; Willingness to Pay; Environmental Knowledge; Environmental Awareness; Generation Z

ABSTRACT

This study examined the influence of product greening cost comprehension and environmental knowledge on green product willingness to pay among Generation Z consumers, with environmental awareness as a mediator, across six Indonesian metropolitan cities: Jakarta, Bandung, Yogyakarta, Surabaya, Medan, and Semarang. A quantitative-explanatory approach used a 5-point Likert-scale questionnaire administered to 464 respondents via purposive sampling, analysed with Partial Least Squares Structural Equation Modelling (SmartPLS 4.0). The measurement model showed strong convergent validity, satisfactory composite reliability, and adequate discriminant validity. Structural model testing confirmed that product greening cost comprehension positively influenced environmental awareness, environmental knowledge exerted a dominant effect on environmental awareness, and both environmental awareness and environmental knowledge significantly influenced willingness to pay. Bootstrapping mediation testing with Bias Corrected Confidence Intervals confirmed full mediation by environmental awareness on the cost comprehension-willingness to pay path, and partial mediation on the environmental knowledge-willingness to pay path.

INTRODUCTION

The increasingly urgent issue of environmental sustainability is pushing consumers toward green products through product greening mechanisms, yet this transition remains hindered by the price premium that burdens consumers (Abubakari et al., 2025; Gomes et al., 2023). In Indonesia, Generation Z (born 1997–2012) claims 77% willingness to pay more for green products (Amaliah et al., 2024), but actual Willingness to Pay (WTP) realisation reaches only 31%, creating a 46% intention–behaviour gap (Barkah et al., 2025). This gap stems from two key cognitive factors that remain inadequately addressed: consumers' low understanding of product greening cost structures (Rompas et al., 2023; Xia et al., 2024), and a deficit in environmental knowledge that affects consumers' ability to rationally evaluate green claims (Dangelico & Fraccascia, 2025). Addressing this gap is urgent: Generation Z is Indonesia's largest and most environmentally vocal generational cohort, and as green product markets expand rapidly, an unresolved gap between environmental intention and actual purchasing behavior risks

undermining the effectiveness of sustainability policies, slowing the growth of the green industry, and prolonging the environmental degradation that this generation claims to be most concerned about; identifying the cognitive mechanisms that can close this gap is therefore a pressing research priority.

Previous studies have extensively examined psychological factors such as green perceived value (Hudayah et al., 2023) and green trust (Ayu Swahastuti & Muna, 2025) as predictors of WTP, yet product greening cost comprehension as a structural cognitive predictor remains minimally explored, and the mediating role of environmental awareness has not been comprehensively tested among Generation Z in Indonesian metropolitan cities (Abubakari et al., 2025; Gomes et al., 2023). This inconsistency of findings across contexts constitutes the research gap underlying the urgency of this study.

This problem is particularly salient in the six research locations selected for this study. Jakarta, Bandung, Yogyakarta, Surabaya, Medan, and Semarang are among Indonesia's largest metropolitan markets, characterised by the highest concentration of modern retail and e-commerce channels through which green and eco-labelled products are marketed, as well as the largest concentrations of Generation Z consumers nationwide (BPS, 2021). It is precisely in markets such as these that the 46% intention–behaviour gap reported nationally (Barkah et al., 2025) is expected to manifest most strongly, since the wide availability of green products increases consumers' exposure to price premiums without necessarily improving their comprehension of the cost structures or environmental claims behind them (Rompas et al., 2023; Xia et al., 2024). This unresolved problem—the coexistence of expanding green product availability with a persistent gap between environmental concern and actual purchasing decisions in Indonesia's major consumer markets—forms the empirical basis for this research and underscores the need to examine the cognitive pathways linking cost comprehension and environmental knowledge to willingness to pay.

This study fills that gap by examining the influence of product greening cost comprehension (X1) and environmental knowledge (X2) on WTP (Y) through the mediation of environmental awareness (M) among Generation Z consumers in the cities of Jakarta, Bandung, Yogyakarta, Surabaya, Medan, and Semarang, using a quantitative-explanatory approach with Partial Least Squares–Structural Equation Modelling (PLS-SEM). The novelty of this study lies in the integration of Cognitive Appraisal Theory (Kemper & Lazarus, 1992), the Knowledge-Attitude-Behavior (KAB) Model (Hungerford & Volk, 1990), the New Ecological Paradigm (NEP) Scale (Dunlap et al., 2000), the Stimulus-Organism-Response (S-O-R) Framework (Mehrabian & Russell, 1974), and Value-Belief-Norm (VBN) Theory (Stern, 2000) within a single comprehensive structural framework, which has not been widely found in the Indonesian green consumer behavior literature.

METHOD

This study used a quantitative approach with an explanatory research design, namely research that explains causal relationships between variables through statistical hypothesis testing (Creswell, 2014; Sugiyono, 2019). The data collection instrument was a structured questionnaire using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) consisting of 41 statement items covering four latent constructs: Product Greening Cost Comprehension (13 items), Environmental Knowledge (10 items), Environmental Awareness (10 items), and Willingness to Pay (8 items). Data analysis was conducted using PLS-SEM with SmartPLS 4.0 software (Ringle et al., 2024).

The study population consisted of Generation Z consumers (born 1997–2012) residing in six major Indonesian cities who had previously known or used green products, with a total population of 5,215,928 people (BPS, 2021). The sampling technique used was purposive sampling with the following criteria: born 1997–2012, residing in the research cities, having purchased/considered green products at least once in the past 12 months, and having active internet access. The final sample size of 464 respondents exceeded three minimum thresholds (Table 1) (Lemeshow et al., 1997): the formula, $n = 384$; the PLS-

SEM 10× indicator rule (Hair et al., 2019), minimum $n = 200$; and the power analysis (Cohen, 1992), $n = 107$, thereby providing adequate statistical power.

Table 1
Respondent Distribution by City

City	n	%
Jakarta	135	29.1%
Surabaya	79	17.0%
Bandung	65	14.0%
Semarang	67	14.4%
Yogyakarta	62	13.4%
Medan	56	12.1%
Total	464	100.0%

Operational Definitions and Variable Measurement

This study operationalises four latent constructs measured through reflective indicators using a 5-point Likert scale, adapted from previous studies (Abubakari et al., 2025; Mahmoud et al., 2022; Dunlap et al., 2000; Rompas et al., 2023); the operationalisation of each construct is summarised in Table 2.

Table 2
Research Variable Operationalisation

Variable	Number of Items	Code
Product Greening Cost Comprehension (X1)	13	X1.1–X1.13
Environmental Knowledge (X2)	10	X2.1–X2.10
Environmental Awareness (M)	10	M1–M10
Willingness to Pay (Y)	8	Y1–Y8

Data Analysis Technique

Data analysis was conducted through two stages of PLS-SEM evaluation (Hair et al., 2019). First, the measurement model (outer model) evaluation covered convergent validity through Average Variance Extracted (AVE) ≥ 0.5 and outer loading ≥ 0.7 ; reliability through Composite Reliability (CR) ≥ 0.7 and Cronbach's Alpha ≥ 0.7 ; as well as discriminant validity through the Heterotrait-Monotrait Ratio (HTMT) < 0.85 (Henseler et al., 2015). Second, the structural model (inner model) evaluation covered the coefficient of determination (R^2), effect size (f^2), multicollinearity testing (VIF), and path coefficient significance testing through bootstrapping with 5,000 iterations. Mediation effect testing was conducted by examining the Variance Accounted For (VAF) and the 95% bias-corrected confidence interval (BCa) (Preacher & Hayes, 2008).

Research Hypotheses

Based on this theoretical framework, this study formulated four hypotheses. Within the framework of Cognitive Appraisal Theory, consumers' understanding of the product greening cost structure triggers a secondary reappraisal that transforms the perception of the price premium into an ecosystemic investment (Abubakari et al., 2025; Rompas et al., 2023):

H1: Product greening cost comprehension positively and significantly influences environmental awareness among Generation Z consumers in the cities of Jakarta, Bandung, Yogyakarta, Surabaya, Medan, and Semarang.

Within the hierarchy of the KAB Model, the accumulation of ecofactual knowledge mediates the transition from the cognitive domain to the affective domain (Dangelico & Fraccascia, 2025; Nazir & Wani, 2024):

H2: Environmental knowledge positively and significantly influences environmental awareness among Generation Z consumers in the cities of Jakarta, Bandung, Yogyakarta, Surabaya, Medan, and Semarang.

Adopting the NEP Scale, environmental awareness operates as a catalyst within personal norms theory that converts emotional awareness into sustainable economic preferences (Mahmoud et al., 2022):

H3: Environmental awareness positively and significantly influences willingness to pay for green products among Generation Z consumers in the cities of Jakarta, Bandung, Yogyakarta, Surabaya, Medan, and Semarang.

Within the S-O-R framework, environmental awareness is presumed to mediate the causal relationship between the independent cognitive predictors (X1 and X2) and the WTP behavioural response, consistent with VBN Theory, which asserts the progression of cognition → affect → pro-environmental action (Barkah et al., 2025):

H4a: Environmental awareness mediates the relationship between product greening cost comprehension and willingness to pay among Generation Z consumers in the cities of Jakarta, Bandung, Yogyakarta, Surabaya, Medan, and Semarang.

H4b: Environmental awareness mediates the relationship between environmental knowledge and willingness to pay among Generation Z consumers in the cities of Jakarta, Bandung, Yogyakarta, Surabaya, Medan, and Semarang.

RESULTS AND DISCUSSION

Data Description and Profile Details

The total sample successfully collected and validated for final analysis comprised 464 Generation Z respondents across six Indonesian metropolitan cities (Table 1). The respondent profile was dominated by females (58.4%), holders of a bachelor's degree (61.2%), those earning Rp1–3 million/month (45.3%), and the majority had purchased green products before (96.9% from the rarely to always category) (Table 3).

Table 3
Summary of Respondent Profile

Characteristic	Classification	%
Gender	Female 58.4%; Male 41.6%	100%
Education	Bachelor's 61.2% ; High School 21.3% ; Diploma 10.6% ; Master's/Doctoral 6.9%	100%
Income/Month	Rp1–3 million 45.3% ; <Rp1 million 28.7% ; Rp3–5 million 17.2% ; >Rp5 million 8.8%	100%
Green Product Purchase Frequency	Sometimes 38.1% ; Rarely 31.5% ; Often 19.8% ; Always 7.5% ; Never 3.1%	100%

Source: 2026 research data

Measurement Model Evaluation (Outer Model)

All 41 indicators had outer loadings ≥ 0.711 (Hair et al., 2019), with the highest values for X1.4 (0.912; understanding of ISO 14001 certification), X2.9 (0.902; circular economy principles), M2 (0.917; awareness of the global ecological crisis), and Y1 (0.896; willingness to pay a higher price). Table 4 shows that all constructs met the required reliability and convergent validity criteria.

Table 4
Reliability and Convergent Validity Test Results

Construct	Cronbach's Alpha	CR (rho_c)	AVE
Product Greening Cost Comprehension (X1)	0.965	0.969	0.706
Environmental Knowledge (X2)	0.947	0.955	0.680
Environmental Awareness (M)	0.939	0.948	0.649
Willingness to Pay (Y)	0.927	0.940	0.663
Threshold (Minimum)	≥ 0.70	≥ 0.70	≥ 0.50

Source: 2026 research data

Discriminant validity was verified using the HTMT criterion (Henseler et al., 2015) and Fornell-Larcker (Fornell & Larcker, 1981); all HTMT values were below the 0.85 threshold (the highest value, for the X2–M pair, was 0.856, still below the lenient 0.90 threshold), and the square root of the AVE for each construct was greater than its correlation with other constructs, confirming adequate discriminant validity.

Structural Model Evaluation (Inner Model)

Fig. 1 presents the PLS-SEM structural model. Environmental Knowledge (X2) was recorded as the dominant predictor of Environmental Awareness ($\beta = 0.649$) compared to Product Greening Cost Comprehension (X1) ($\beta = 0.255$). The direct path X1 $\rightarrow$ Y was very weak ($\beta = 0.044$) compared to X2 $\rightarrow$ Y ($\beta = 0.425$), indicating full mediation by Environmental Awareness in the relationship between X1 and WTP.

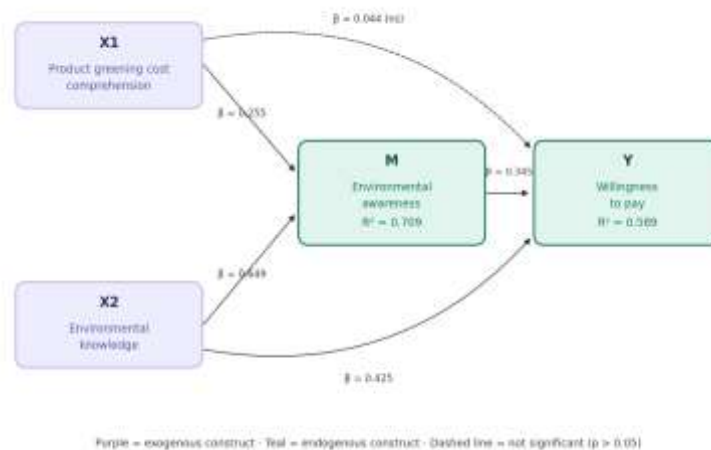


Fig. 1 PLS-SEM Structural Model

The PLS-SEM model explained 70.9% of the variance in Environmental Awareness (substantial) and 58.9% of the variance in Willingness to Pay (moderate–substantial). The effect size of Environmental Knowledge on Environmental Awareness was 0.799 (very large) (Table 5). The structural multicollinearity test (inner VIF) produced values of 1.82–3.44, well below the critical threshold of 5.0. Out-of-sample predictive relevance was tested through the PLS predict procedure (Shmueli et al., 2019); all 18 indicators for the Environmental Awareness and Willingness to Pay constructs obtained positive Q^2 predict values (average 0.408), confirming that the model has adequate predictive relevance.

Table 5
Coefficient of Determination (R^2) and Effect Size (f^2)

Endogenous Variable	R^2	Interpretation	f^2 (X1)	f^2 (X2)
Environmental Awareness (M)	0.709	Substantial	0.123 (Moderate)	0.799 (Large)
Willingness to Pay (Y)	0.589	Moderate– Substantial	0.002 (Very Small)	0.135 (Moderate)

Source: 2026 research data

Hypothesis Testing and Mediation Effects

Hypothesis testing was conducted through bootstrapping with 5,000 subsamples at a 95% confidence level (Preacher & Hayes, 2008). Hypotheses H1, H2, and H3 were all empirically supported with $p < 0.001$. An interesting pattern was identified in the $X1 \rightarrow Y$ (direct) path: not significant ($\beta = 0.044$; $p = 0.197$), whereas $X2 \rightarrow Y$ (direct) was strongly significant ($\beta = 0.425$; $p < 0.001$) (Table 6).

Table 6
Path Coefficient Test Results

Hypothesis	Path	β	T -stat	P -value	Decision
H1	$X1 \rightarrow M$ (EA)	0.255	6.633	< 0.001	Accepted
H2	$X2 \rightarrow M$ (EA)	0.649	16.514	< 0.001	Accepted
H3	M (EA) $\rightarrow Y$ (WTP)	0.345	5.196	< 0.001	Accepted
—	$X1 \rightarrow Y$ (Direct)	0.044	1.289	0.197	Not Significant
—	$X2 \rightarrow Y$ (Direct)	0.425	6.059	< 0.001	Significant

Source: 2026 research data

Mediation testing confirmed that environmental awareness fully mediates the $X1 \rightarrow M \rightarrow Y$ path (VAF = 66.67%) and partially mediates the $X2 \rightarrow M \rightarrow Y$ path (VAF = 34.55%) (Table 7). The total effect of $X2$ on Y reached $\beta = 0.649$, positioning environmental knowledge as the most important predictor of green product WTP among Generation Z, while the total effect of $X1$ on Y of $\beta = 0.132$ ($p < 0.001$) confirms that its total contribution remains significant when the mediation effect is accounted for.

Table 7
Environmental Awareness Mediation Effect Test Results

Hypothesis	Indirect Path	β Indirect	P -value	VAF	Type of Mediation
H4a	$X1 \rightarrow M \rightarrow Y$	0.088	< 0.001	66.67%	Full Mediation
H4b	$X2 \rightarrow M \rightarrow Y$	0.224	< 0.001	34.55%	Partial Mediation

Source: 2026 research data

Discussion

The results of this study confirm all the hypotheses formulated. The H1 finding supports the premise of Cognitive Appraisal Theory (Kemper & Lazarus, 1992): understanding of the greening cost structure (ISO 14001 certification, organic raw material premiums, low-emission supply chains) triggers a secondary reappraisal that transforms the perception of the price premium from a financial burden into an ecosystemic investment, consistent with (Abubakari et al., 2025; Rompas et al., 2023). The moderate effect size ($f^2 = 0.123$) indicates that cost transparency alone is not yet as powerful as comprehensive ecological education interventions (Dangelico & Fraccascia, 2025). This finding is in line with recent experimental evidence that green advertising appeals increase consumers' willingness to pay a premium

primarily by enhancing their perceived green value of the product, rather than through price or cost information alone (Zheng et al., 2022), and that the influence of a consumer's reference group further shapes the strength of this willingness (Shi & Jiang, 2023).

Strong support for H2 ($\beta = 0.649$; $f^2 = 0.799$) confirms the KAB Model (Hungerford & Volk, 1990), showing that the accumulation of ecofactual knowledge is the primary foundation for the formation of environmental awareness. This coefficient is far higher than the correlations reported in previous studies, which can be explained by Generation Z's digital nativeness, which accelerates the conversion of ecological literacy into normative awareness through exposure to climate content on social media (Nazir & Wani, 2024). This corroborates evidence that environmental knowledge exerts its effect on pro-environmental behaviour primarily through the mediating pathway of environmental attitudes and behavioural intentions, rather than through knowledge alone (Liu et al., 2020).

H3 is supported ($\beta = 0.345$), consistent with Mahmoud et al. (2022) and Casalegno et al. (2022), which confirmed environmental awareness as a predictor of WTP across generations, through the lens of the NEP Scale (Dunlap et al., 2000) as a catalyst for moral suasion (Stern, 2000). The gap between 77% intention and 31% actual WTP is partly explained by non-attitudinal barriers such as the limited income of Generation Z in this study's sample. This result is consistent with recent applications of the Value-Belief-Norm framework among young consumers, which likewise find that personal norms — the VBN construct closest to environmental awareness in activating pro-environmental commitment — significantly predict green consumption intention among young consumers (Hong et al., 2024), and with evidence that green consumer knowledge and trust jointly reinforce Generation Z's green purchase behavior (Borah et al., 2024).

Mediation testing (H4a, H4b) reveals a dual pathway of environmental knowledge that constitutes a novel contribution of this study: product greening cost comprehension (X1) is unable to directly drive WTP but must first activate environmental awareness as an organism mediator, consistent with the S-O-R Framework (Mehrabian & Russell, 1974). This non-significant direct path may also consumers elsewhere, whereby skepticism toward unsubstantiated sustainability claims can weaken or offset the effect of otherwise positive green attitudes on purchase-related outcomes (Di Pillo et al., 2025; Do et al., 2025), whereas environmental knowledge (X2) operates through two simultaneous pathways—a deliberative pathway (through awareness) and a direct automatic cognitive pathway—differing from previous findings in Portugal that found no mediation (Gomes et al., 2023). This mediated structure is also echoed in recent findings among young European consumers, showing that several green-marketing antecedents are similarly channelled into young consumers' purchasing decisions through a single environmental-concern mediator, a pattern consistent with the present study's own mediated structure (Lopes et al., 2024). Taken together, these findings validate VBN Theory (Stern, 2000): environmental knowledge as beliefs $\rightarrow$ environmental awareness as norm activation $\rightarrow$ WTP as pro-environmental action.

CONCLUSIONS

This study successfully confirmed all the hypotheses formulated through PLS-SEM testing of 464 Generation Z respondents in six Indonesian metropolitan cities. Product greening cost comprehension was shown to have a positive and significant effect on environmental awareness ($\beta = 0.255$; $p < 0.001$), environmental knowledge was shown to be the dominant predictor of environmental awareness ($\beta = 0.649$; $p < 0.001$), and environmental awareness had a significant effect on willingness to pay for green products ($\beta = 0.345$; $p < 0.001$). Mediation testing confirmed the dual role of environmental awareness: full mediation on the X1 $\rightarrow$ M $\rightarrow$ Y path (VAF = 66.67%) and partial mediation on the X2 $\rightarrow$ M $\rightarrow$ Y path (VAF = 34.55%). The PLS-SEM model explains 70.9% of the variance in environmental awareness and 58.9% of the variance in WTP, with environmental knowledge as the most determinant variable (total effect $\beta = 0.649$ on WTP). These findings empirically validate the integration of Cognitive Appraisal Theory, the KAB Model, the NEP Scale, the S-O-R Framework, and VBN Theory within a single

comprehensive structural framework to explain the green consumption behaviour of urban Generation Z in Indonesia.

The managerial implications of this study include shifting marketing communication strategy from mere price transparency toward comprehensive ecological education, digital-based environmental literacy programs (Instagram, TikTok, YouTube) specifically designed for Generation Z, and eco-storytelling narratives that connect greening cost components with measurable ecological benefits. For policymakers, environmental education needs to be systematically integrated into the formal curriculum, accompanied by strengthened ecolabeling and fiscal incentives for producers who transparently implement product greening standards.

The limitations of this study include a cross-sectional design that limits temporal causal inference, as well as the generalizability of findings, which remains limited to six metropolitan cities. Future research is recommended to use a longitudinal design, test moderating variables such as income and education levels in the dual pathway of environmental knowledge, integrate economic accessibility variables such as perceived price fairness, and expand replication to semi-urban, rural, and other developing regions within ASEAN.

REFERENCES

- Abubakari, A., Majeed, M., Amoako, G. K., Ofori, K. S., & Ampong, G. O. A. (2025). Going green, paying more: the relationship between trust in green labeling, green perceived value and price premiums. *International Journal of Quality and Service Sciences*, 17(3), 381–404. <https://doi.org/10.1108/IJQSS-09-2023-0132>
- Amaliah, A. N. S., Sucipto, K. R. R., Aisyah, S., & Rahmawati, A. (2024). Bridging the Green Gap: Millennials and Gen Z's Willingness to Pay More for Eco-Friendly Products in Indonesia. *Jurnal Inovasi Pendidikan Ekonomi (JIPE)*, 14(2), 204. <https://doi.org/10.24036/011316660>
- Ayu Swahastuti, I., & Muna, N. (2025). The Influence of Environmental Knowledge and Environmental Concern on Purchase Intention of Green Personal Care Products, Mediated by Green Trust Among Generation Z in Bali. *Eduvest - Journal of Universal Studies*, 5(9), 11285–11302. <https://doi.org/10.59188/eduvest.v5i9.51475>
- Barkah, B., Prasetyo, P. F., & Listiana, E. (2025). Decoding Gen Z's Green Purchases: The Role of Product Attributes and Environmental Awareness. *Dinasti International Journal of Education Management And Social Science*, 6(6), 5342–5352. <https://doi.org/10.38035/dijemss.v6i6.5243>
- Borah, P. S., Dogbe, C. S. K., & Marwa, N. (2024). Generation Z's green purchase behavior: Do green consumer knowledge, consumer social responsibility, green advertising, and green consumer trust matter for sustainable development? *Business Strategy and the Environment*, 33(5), 4530–4546. <https://doi.org/10.1002/bse.3714>
- BPS (Badan Pusat Statistik). (2021). *Hasil Sensus Penduduk 2020*. <https://sensus.bps.go.id/topik/tabular/sp2020/2>. Accessed August 2, 2026.
- Casalegno, C., Candelo, E., & Santoro, G. (2022). Exploring the antecedents of green and sustainable purchase behaviour: A comparison among different generations. *Psychology & Marketing*, 39(5), 1007–1021. <https://doi.org/10.1002/mar.21637>
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159. <https://doi.org/10.1037/0033-2909.112.1.155>
- Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks, CA: SAGE Publications.
- Dangelico, R. M., & Fraccascia, L. (2025). Mainstreaming green products from industrial symbiosis: Does environmental knowledge affect consumers' perceptions and behavioral intentions? *Resources, Conservation & Recycling Advances*, 28, 200297. <https://doi.org/10.1016/j.rcradv.2025.200297>
- Di Pillo, F., Palombi, G., & Strazzullo, S. (2025). Does Greenwashing Wash Away Gen Z's Green Purchase Intention? *Business Strategy and the Environment*, 34(7), 9081–9092.

- <https://doi.org/10.1002/bse.70064>
- Do, A. D., Ha, D. L., Phan, T. T. L., Bui, T. M., Le, T. B. N., Tran, M. N., & Dang, D. Q. (2025). Antecedents of Gen Z's green purchase intention in Vietnam's fashion industry with the moderating role of greenwash perception. *PLOS One*, 20(5), e0324923. <https://doi.org/10.1371/journal.pone.0324923>
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). New Trends in Measuring Environmental Attitudes: Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale. *Journal of Social Issues*, 56(3), 425–442. <https://doi.org/10.1111/0022-4537.00176>
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- Gomes, S., Lopes, J. M., & Nogueira, S. (2023). Willingness to pay more for green products: A critical challenge for Gen Z. *Journal of Cleaner Production*, 390, 136092. <https://doi.org/10.1016/j.jclepro.2023.136092>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hong, Y., Al Mamun, A., Masukujjaman, M., & Yang, Q. (2024). Significance of the environmental value-belief-norm model and its relationship to green consumption among Chinese youth. *Asia Pacific Management Review*, 29(1), 127–140. <https://doi.org/10.1016/j.apmr.2023.10.002>
- Hudayah, S., Aulia Ramadhani, M., Arum Sary, K., Raharjo, S., & Yudaruddin, R. (2023). Green perceived value and green product purchase intention of Gen Z consumers: Moderating role of environmental concern. *Environmental Economics*, 14(2), 87–102. [https://doi.org/10.21511/ee.14\(2\).2023.07](https://doi.org/10.21511/ee.14(2).2023.07)
- Hungerford, H. R., & Volk, T. L. (1990). Changing Learner Behavior Through Environmental Education. *The Journal of Environmental Education*, 21(3), 8–21. <https://doi.org/10.1080/00958964.1990.10753743>
- Kemper, T. D., & Lazarus, R. S. (1992). Emotion and Adaptation. *Contemporary Sociology*, 21(4), 522. <https://doi.org/10.2307/2075902>
- Lemeshow, S., Hosmer, D. W., Klar, J., & Lwanga, S. K. (1997). *Besar Sampel dalam Penelitian Kesehatan*. Yogyakarta: Gadjah Mada University Press.
- Liu, P., Teng, M., & Han, C. (2020). How does environmental knowledge translate into pro-environmental behaviors? The mediating role of environmental attitudes and behavioral intentions. *Science of The Total Environment*, 728, 138126. <https://doi.org/10.1016/j.scitotenv.2020.138126>
- Lopes, J. M., Gomes, S., Suchek, N., & Nogueira, S. (2024). The hidden reasons behind Generation Z's green choices. *Discover Sustainability*, 5(1), 520. <https://doi.org/10.1007/s43621-024-00764-8>
- Mahmoud, M. A., Tsetse, E. K. K., Tulasi, E. E., & Muddey, D. K. (2022). Green Packaging, Environmental Awareness, Willingness to Pay and Consumers' Purchase Decisions. *Sustainability*, 14(23), 16091. <https://doi.org/10.3390/su142316091>
- Mehrabian, A., & Russell, J. A. (1974). *An Approach to Environmental Psychology*. Cambridge, MA: MIT Press.
- Nazir, M., & Wani, T. A. (2024). Role of social media influencer toward environmental involvement and green buying behavior. *Business Strategy & Development*, 7(2). <https://doi.org/10.1002/bsd2.390>
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879–891. <https://doi.org/10.3758/BRM.40.3.879>
- Ringle, Christian M. Wende, Sven Becker, J.-M. (2024). *SMARTPLS*. <https://doi.org/https://www.smartpls.com>. Accessed July 11, 2026.

- Rompas, P. C., Nugraha, H. D., Febrina, V., Saroso, H., Syachari, D. H., & Diena. (2023). Should We Continue to Sell Green Products? A Case Study of Willingness to Pay More for Green Furniture Products. *E3S Web of Conferences*, 426, 02056. <https://doi.org/10.1051/e3sconf/202342602056>
- Shi, J., & Jiang, Z. (2023). Willingness to pay a premium price for green products: does a reference group matter? *Environment, Development and Sustainability*, 25(8), 8699–8727. <https://doi.org/10.1007/s10668-022-02419-y>
- Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J.-H., Ting, H., Vaithilingam, S., & Ringle, C. M. (2019). Predictive model assessment in PLS-SEM: guidelines for using PLSpredict. *European Journal of Marketing*, 53(11), 2322–2347. <https://doi.org/10.1108/EJM-02-2019-0189>
- Stern, P. C. (2000). New Environmental Theories: Toward a Coherent Theory of Environmentally Significant Behavior. *Journal of Social Issues*, 56(3), 407–424. <https://doi.org/10.1111/0022-4537.00175>
- Sugiyono. (2019). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
- Xia, S., Ling, Y., de Main, L., Lim, M. K., Li, G., Zhang, P., & Cao, M. (2024). Creating a low carbon economy through green supply chain management: investigation of willingness-to-pay for green products from a consumer's perspective. *International Journal of Logistics Research and Applications*, 27(7), 1154–1184. <https://doi.org/10.1080/13675567.2022.2115988>
- Zheng, M., Tang, D., Chen, J., Zheng, Q., & Xu, A. (2022). How different advertising appeals (green vs. non-green) impact consumers' willingness to pay a premium for green agricultural products. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.991525>