



Influencer Sustainability Messaging for Food Waste Reduction: The Roles of Perceived Value and Eco-Guilt in Sustainable Consumption

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ABSTRACT

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Food waste remains a major sustainability challenge, generating economic losses and environmental impacts. Although influencer sustainability messaging has become increasingly visible in digital campaigns, the psychological mechanisms through which such messages encourage food waste reduction remain insufficiently examined. Drawing on the Stimulus–Organism–Response (S-O-R) framework, this study investigates how expertise (EPT), trustworthiness (TWO), and influencer attractiveness (IAT) shape consumers’ perceived functional (FUN), economic (ECO), and emotional values (EMO), which subsequently influence food waste reduction intention (FWI) and food waste reduction behavior (FWB). Eco-guilt (EG) is further examined as a moderator in the value–intention (FUN, ECO, EMO → FWI) and FWI → FWB relationships. Data were collected from 456 consumers in Vietnam and analyzed using partial least squares structural equation modeling (PLS-SEM). The results show that influencer attributes significantly enhance specific perceived value dimensions, which in turn promote FWI and FWB. EG strengthens the relationship between FUN and FWI, as well as the relationship between FWI and FWB, whereas its moderating effects on ECO and EMO pathways are insignificant. The findings extend the S-O-R framework to digital sustainability communication and offer practical implications for designing influencer-based campaigns that support responsible food consumption and food waste reduction.

1. INTRODUCTION

Whilst millions of people face food insecurity [1], the lack of green food consumption globally makes approximately one-third of food wasted annually, leading to an estimated economic loss of US\$1 trillion [2]. Even worse, the problem triggers remarkable and multifaceted impacts across environmental, social, and economic fields [3, 4]. As a result, fostering green consumption to reduce food waste is integral in securing the future of the planet [5].

Whereas some retailers try to adjust the packaging, price formation and price discounts of sustainable food [6], others link these products to environmental messages [7] and transparent authenticity [8]. However, the general impact of these approaches is not remarkable [7]. As an innovative approach, Nekmahmud et al. [9] and Wu et al. [10] have highlighted the role of social influencers as endorsers in green content, particularly those who express profound environmental concerns and advocate for disciplined consumption, in influencing consumers’ intentions and behaviors to buy sustainable food, supported by the social-media environment [11, 12]. However, Kapoor et al. [13] have pinpointed that not many green messages from influencers materialize into fruitful results, as the qualifications and

mechanisms regarding this process have not been comprehensively explored. Consequently, building on this literature, the present study examines the qualities of an impactful “green” influencer in sustainable promotion and the mechanism through which green messages from influencers translate into actual food waste reduction behaviors (FWB).

Furthermore, the effectiveness of the messages does not solely lie in the influencers themselves, but also in the inner state of the customers. One of the factors needing to be illuminated is eco-guilt (EG), which is closely associated with pro-environmental behaviors [14]. As highlighted by Shipley and van Riper [15], EG is a key factor stimulating and leveraging green intentions to actual green behaviors. As a result, this study will closely examine the impact of these two factors in green message conveying.

This study aims to investigate how influencers can strengthen and consolidate their green messages, effectively promoting sustainable food consumption intentions that eventually drive FWB. Based on the above objectives, the study aims to answer the following research questions:

RQ1: How do influencer endorsers’ content impact customers’ food waste reduction intentions (FWI) and FWB?

RQ2: Does EG amplify the impact of influencer endorsers’ content on customers’ FWI and FWB?

Addressing these questions would provide actionable insights for marketers and policymakers to promote sustainable food consumption and policy planning for urban sustainability, significantly contributing to SDG 12.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Influencer endorsers and consumers' perception of food waste reduction

Influencers are individuals who leverage their social media presence to shape followers' beliefs, attitudes, and behaviors [16], including sustainable consumption. This paper focuses on three popular determinants of their persuasive impact: trustworthiness (TWO), expertise (EPT), and influencer attractiveness (IAT) [17]. In the context of food waste, unreasonable food consumption is primarily attributed to consumers' misconceptions about freshness and related risks of food [18]. Influencers who communicate credible, accurate, and emotionally resonant information can encourage or even reshape these perceptions [19].

While the role of influencers has been extensively studied in commercial contexts [20], their effectiveness in promoting sustainable behaviors, particularly food waste reduction, remains underexplored. Therefore, this study focuses on understanding how influencer endorsers' content dimensions influence consumers' perceived functional (FUN), economic (ECO), and emotional values (EMO), which subsequently shape their intention to reduce food waste.

2.2 Eco-guilt and its role in the context of food waste reduction

EG is a cognitive moral emotion that arises when individuals experience a disparity between their green values and their actual behavior [21, 22]. It is a negative emotion linked to individual guilt for harm brought to the environment and typically drives corrective action [23]. In the domain of sustainability, EG functions as a tool of control to close the intention-behavior gap and ensure that an individual's actions match their beliefs [24].

In the context of food waste, EG arises when individuals feel uncomfortable after they have wasted food or realized they were among the contributing causes of decreasing resources [25]. These guilt states heighten moral sensitivity and provoke compensatory behavior, such as saving food items, frugal shopping, or sharing surplus food, to restore balance and achieve a good self-concept. Although EG has been examined as a driver of pro-environmental behavior in other domains [14, 15], its moderating role in the relationship between influencer-driven value perceptions and food waste reduction has received limited empirical attention. This study therefore incorporates EG as a moderator to clarify whether it amplifies these relationships in the context of food waste reduction.

2.3 Theoretical framework

To address our research questions, this study adopts the Stimulus–Organism–Response (S-O-R) model by Mehrabian and Russell [26], which explains how influencer endorsers (Stimuli) impact perceived FUN, EMO and ECO (Organism),

resulting in specific intentions and behaviors (Response). Specifically, we focus on three influencers' traits as stimuli: TWO, EPT and IAT. TWO of influencers, as Li et al. [27] suggested, impacts the reliability of the content conveyed, whereas EPT and IAT represent credibility [28]. Perceived values (FUN, ECO, and EMO) act as organisms, mediating the impacts of stimuli on intentions and behaviors. While FUN refers to customers' perceptions of product usefulness [29], EMO and ECO refer to positive sentiments [30] and cost utility [31], respectively. As perceived values about sustainable food consumption increase, people are more likely to respond and take action. Lastly, responses refer to the willingness to act on the intentions and behaviors related to the reduction of food waste.

2.4 Hypotheses development

EPT is defined as the degree to which the influencer is viewed as having specific expertise, competence, and skills in a specific domain [32]. In the context of sustainable consumption, EPT is one of the sources of credibility because consumers tend to turn to individuals who are knowledgeable about specific issues to gain better insight into environmentally-related behaviors [33]. As indicated by empirical research, EPT is critical in enhancing the persuasiveness of influencers, thereby enhancing consumer engagement [34]. EPT could also influence consumers' perceptions of the ECO of products [35, 36]. Therefore, influencers who provide clear knowledge and practical strategies can help consumers recognize both the functional effectiveness and the financial benefits of reducing food waste.
H1a,b: *EPT positively influences consumers' FUN and ECO.*

TWO is the measure of how much consumers see an influencer as honest and sincere in their communication and endorsements [37]. TWO is essential in sustainability communication because consumers seek authentic sources of information on sustainable practices [38]. When an influencer is seen as trustworthy, consumers are more likely to accept their recommendations as authentic [39]. In addition, trustworthy influencers may help consumers identify the FUN of reducing food waste and the ECO linked to better food management [40]. Moreover, trust may lower perceived risks in economic decisions and build confidence in the economic claims made by influencers [41]. Consumers may also experience feelings of reassurance and satisfaction when they depend on trustworthy influencers, thus enhancing their commitment to sustainable behaviors [30].
H2a,b,c: *TWO positively influences consumers' FUN, ECO and EMO.*

IAT refers to the degree to which an influencer is perceived as physically attractive, glamorous, charming, and sophisticated to the target audience [17]. Consumers develop a more intimate relationship with the influencer if the influencer presents a lifestyle that is consistent and genuine, which resonates with environmental idealism [28, 42]. Therefore, if the influencer presents content on food sustainability, consumers will view the influencer as a role model whose behavior can be emulated, leading to the development of FUN [43, 44]. Additionally, parasocial relationships suggest that the influencer's attractiveness makes consumers more emotionally connected to the influencer [45, 46]. When consumers feel emotionally connected to such

influencers, they are more likely to experience positive emotions such as pride, inspiration, and moral satisfaction, which encourages them to translate these feelings into consistent pro-environmental actions [47].

H3a,b: *IAT positively influences consumers' ECO and EMO.*

FUN, ECO, and EMO play an important mediating role between influencer characteristics and consumers' behavioral intentions [48]. When individuals perceive that such behaviors improve efficiency, optimize resources, and bring practical outcomes, they are more likely to develop intentions to adopt them [49]. In particular, FUN helps consumers recognize the practical effectiveness of reducing food waste [17]. ECO provides financial motivation by highlighting potential cost savings and more efficient household food management [9]. EMO strengthens consumers' internal motivation to engage in sustainable behaviors through feelings of joy, pride or moral satisfaction [50, 9]. Interactions with credible influencers who communicate sustainability messages with empathy can further strengthen these feelings [51, 52].

H4a,b,c: *FUN, ECO and EMO positively influence FWI.*

The link between behavioral intention and actual behavior is a fundamental proposition of behavioral psychology. According to the Theory of Planned Behavior, individuals are more likely to engage in a behavior as they form positive evaluations and intentions towards the behavior [53]. Past research on green consumption indicates that intentions towards sustainable behaviors are a significant predictor of actual behavior [54]. Research on influencer-driven sustainability campaigns also finds that strong intentions can lead to consistent sustainable behavior, especially when

supported by emotional engagement and perceived self-efficacy [15]. Individuals with stronger waste reduction intentions tend to produce lower levels of food waste over time [55].

H5: *FWI positively influences FWB.*

EG refers to the negative emotional state that arises when individuals realize that their actions or inactions may harm the environment or do not meet their internal environmental standards [56]. It involves feelings of regret, remorse and moral discomfort, which often motivate individuals to correct their behavior and restore moral balance [24]. EG may reinforce the effect of value-based beliefs on behavioral intention. If people feel EG about food waste, they would be more concerned about the consequences of preventing waste, which would amplify the effect of FUN-based beliefs on intention [57]. EG would also potentially amplify the effect of ECO-based beliefs [21, 24, 58, 59] and interact with EMO-based beliefs [23, 60].

H6a,b,c: *EG moderates the relationships between FUN, ECO and EMO and FWI.*

Moreover, EG could also enhance the connection between intention and action. People who feel EG are more likely to behave in a manner consistent with their intentions in order to alleviate moral discomfort or dissonance [21]. This could motivate individuals to engage in actual behaviors, such as meal planning, portion control, or using leftover food [57].

H6d: *EG moderates the relationship between FWI and FWB.*

The overall research framework depicting these hypothesized relationships is presented in Figure 1.

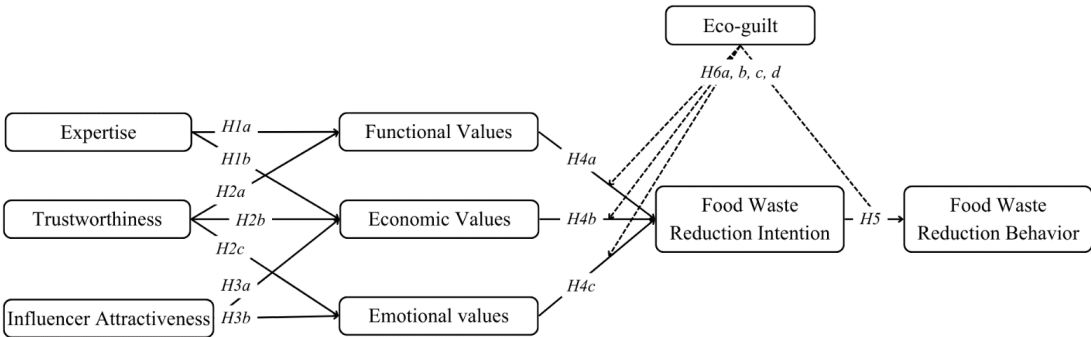


Figure 1. Research framework

3. METHODOLOGY

3.1 Sample and procedures

The study was conducted in Vietnam between August and October 2025, an emerging market with rapid socio-economic growth, high urbanization rates, and an expanding market size [60, 61]. The sampling method focused on adults with experience using social media and familiarity with influencer-generated green content. A stratified purposive sampling technique was used to ensure representation of different ages and income groups. This study used an organized survey disseminated via the internet using university networks and social media. The study used a scale to measure the perception of influencer credibility, EG, and sustainable food consumption behavior. To make sure the concept was clearly

demonstrated, participants were first exposed to short fabricated social media posts by the green lifestyle influencer about ways to minimize food wastage at home and only then asked to evaluate her competence, credibility, and attractiveness. In order to ensure the concept was understood, the study used a short influencer post on the topic of going green, assisting respondents in visualizing the research context. In order to ensure a valid sample size, the inverse square root method was used to calculate the minimum sample size for SEM [62], resulting in a minimum sample size of 177. The total sample collected was 456 respondents.

Table 1 presents the demographic profile of respondents. The majority were female (58.3%), aged 25 to 34 years (48.7%), with undergraduate education (58.8%). Regarding income, the largest group earned between \$400 and \$800 monthly (47.8%), followed by those earning below \$400

(39.5%), reflecting a young, well-educated urban consumer profile with moderate income levels.

Table 1. Respondent's characteristics

Demographics	Categories	Frequency	%
Gender	Male	190	41.7
	Female	266	58.3
Age	18–24 years old	180	39.5
	25–34 years old	222	48.7
	35–44 years old	34	7.5
	45–54 years old	14	3.1
	> 55 years old	6	1.3
Education	High school	86	18.9
	Undergraduate	268	58.8
	Postgraduate	102	22.4
	< \$400	180	39.5
Monthly Income	\$400–\$800	218	47.8
	\$800–\$1200	40	8.8
	\$1200–\$1600	10	2.2
	> \$1600	8	1.8

3.2 Measures

The scales for the constructs of the study were created through the use of prior validated research studies with slight modifications to suit the Vietnamese research context. The constructs of TWO, EPT, and IAT were borrowed from Al Mamun et al. [28] to represent the concept of consumers' perceived attributes of green influencers. The constructs of FUN, EMO, and ECO were modified from Carlson et al. [35] to measure consumers' perceived value formation of green food consumption. FWI scale was borrowed from Chi [63]. FWB was measured through the scale developed by Nekmahmud et al. [9]. Finally, EG was measured as the general climate-change EG scale developed by Ágoston et al. [14]. This general scale was adopted because, at the time of instrument design, limited validated food-waste-specific EG scale was available; general environmental guilt is theorized to spill over into and shape behavior in specific pro-environmental domains. Full scale items for all constructs are presented in Table A1.

3.3 Data analysis

The suggested model was evaluated partial least squares structural equation modeling (PLS-SEM). PLS-SEM enables prediction and theory development and is appropriate for assessing complex models with a number of mediators and moderators. In social sciences, PLS-SEM is used in various forms of study, especially in consumer behavior and marketing [64].

The analysis process involved two major steps. First, the measurement model was checked to ensure that all constructs were dependable and met the requirements for discriminant and convergent validity. Second, in order to test the hypotheses, identify collinearity problems, and check path coefficients and R^2 , the structural model was subjected to testing.

4. RESULTS AND DISCUSSION

4.1 Common method bias

Given the use of a self-reported questionnaire, common

method bias (CMB) may pose a threat to the validity of the findings; therefore, it was assessed through both procedural and statistical approaches following MacKenzie and Podsakoff [65]. Procedurally, the survey instrument was designed to be well-structured, concise, and written in Vietnamese, and respondent confidentiality was assured throughout data collection. Statistically, Harman's single-factor test was conducted, and the largest component accounted for 31.315% of the total variance. While this value remained below the conventional 50% cutoff, it is relatively close to the threshold, so this result alone should not be interpreted as conclusive evidence that CMB is not present. A marker variable technique was therefore also employed, in which two items theoretically unrelated to the focal constructs "I am using Microsoft Word", "I am using Microsoft PowerPoint" were included as a marker variable and linked to all substantive constructs in the model. The average absolute path coefficient between the marker variable and the constructs was small ($r_m = 0.031$), with most coefficients being non-significant ($p > 0.05$); only the path to FWB reached marginal significance ($\beta = 0.076$, $p = 0.024$). Comparing the adjusted R^2 values of the model with and without the marker variable showed only a modest maximum increase of 0.5 percentage points, well below the commonly cited 10% threshold. Additionally, all VIF values ranged from 1.420 to 3.197, below the conservative threshold of 3.3 recommended for full collinearity assessment [64]. Taken together, while no single test can fully rule out CMB in cross-sectional, self-reported data, the convergence of these three approaches suggests that CMB is unlikely to substantially distort the study's conclusions.

4.2 Measurement model

To assess the measurement model, factor loadings, reliability, convergent validity, and discriminant validity were thoroughly examined. As presented in Table 2, all standardized loadings ranged from 0.779 to 0.899, surpassing the minimum acceptable threshold of 0.70 [64]. Internal consistency was well-established, with Cronbach's alpha values between 0.735 and 0.931 and composite reliability values between 0.850 and 0.948, both exceeding the recommended benchmark of 0.70. AVE values ranged from 0.653 to 0.785, well above 0.50, confirming convergent validity [64]. For discriminant validity, all Heterotrait-Monotrait ratio values were between 0.158 and 0.813, within the conservative limit of 0.90 (Table 3) [66]. All constructs of the measurement model thus have satisfactory levels of reliability and validity.

Model fit was subsequently assessed to evaluate the overall adequacy of the structural model. As shown in Table 4, the standardized root mean square residual (SRMR) of the estimated model was 0.072, below the commonly accepted cutoff of 0.08, while the normed fit index (NFI) reached 0.871. Predictive relevance was further examined through the cross-validated predictive ability test (CVPAT, Table 5). The PLS-SEM model produced significantly lower prediction error than the indicator-average (IA) benchmark across all constructs ($p < 0.001$), and lower error than the linear-model (LM) benchmark for FWB ($p = 0.045$), while showing statistically equivalent performance to the LM benchmark for the remaining constructs and at the overall level ($p > 0.05$). These results indicate that the model possesses meaningful predictive power beyond naïve and linear benchmarks.

Table 2. Reliability and validity of constructs

Construct	Item	Loading	α	rho_A	CR	AVE
Economic Values (ECO)	ECO1	0.884	0.896	0.897	0.928	0.762
	ECO2	0.867				
	ECO3	0.841				
	ECO4	0.899				
Eco-guilt (EG)	EG1	0.839	0.903	0.905	0.925	0.673
	EG2	0.830				
	EG3	0.803				
	EG4	0.825				
	EG5	0.779				
	EG6	0.843				
Emotional Values (EMO)	EMO1	0.821	0.735	0.739	0.850	0.653
	EMO2	0.784				
	EMO3	0.820				
Expertise (EPT)	EPT1	0.846	0.901	0.901	0.926	0.716
	EPT2	0.856				
	EPT3	0.839				
	EPT4	0.837				
	EPT5	0.851				
Influencer Attractiveness (IAT)	IAT1	0.868	0.890	0.890	0.924	0.752
	IAT2	0.879				
	IAT3	0.862				
	IAT4	0.859				
Functional Values (FUN)	FUN1	0.847	0.833	0.833	0.900	0.750
	FUN2	0.868				
	FUN3	0.882				
Food Waste Reduction Behavior (FWB)	FWB1	0.859	0.880	0.882	0.918	0.736
	FWB2	0.854				
	FWB3	0.867				
	FWB4	0.852				
Food Waste Reduction Intention (FWI)	FWI1	0.878	0.909	0.909	0.936	0.785
	FWI2	0.886				
	FWI3	0.893				
	FWI4	0.886				
Trustworthiness (TWO)	TWO1	0.894	0.931	0.932	0.948	0.785
	TWO2	0.887				
	TWO3	0.886				
	TWO4	0.889				
	TWO5	0.874				

Table 3. Assessment of discriminant validity

	ECO	EG	EMO	EPT	IAT	FUN	FWB	FWI	TWO
EG	0.378								
EMO	0.813	0.260							
EPT	0.625	0.231	0.449						
IAT	0.684	0.252	0.533	0.331					
FUN	0.566	0.158	0.390	0.545	0.318				
FWB	0.482	0.550	0.400	0.253	0.303	0.192			
FWI	0.780	0.449	0.702	0.441	0.499	0.521	0.638		
TWO	0.529	0.180	0.424	0.317	0.317	0.631	0.247	0.377	

Note: ECO = Economic Values; EG = Eco-guilt; EMO = Emotional Values; EPT = Expertise; IAT = Influencer Attractiveness; FUN = Functional Values; FWB = Food Waste Reduction Behavior; FWI = Food Waste Reduction Intention; TWO = Trustworthiness.

Table 4. Model fit

	Saturated Model	Estimated Model
SRMR	0.038	0.072
d_ ULS	1.055	3.868
d_ G	0.486	0.626
Chi-square	1314.095	1559.798
NFI	0.892	0.871

Table 5. Cross-validated predictive ability test

Construct	PLS Loss	IA Loss	p-Value	LM Loss	p-Value
ECO	0.588	1.057	0.000	0.600	0.222
EMO	0.454	0.535	0.000	0.463	0.276
FUN	0.185	0.266	0.000	0.177	0.294

FWB	0.341	0.429	0.000	0.354	0.045
FWI	0.381	0.518	0.000	0.389	0.381
Overall	0.398	0.579	0.000	0.405	0.134

Note: ECO = Economic Values; EMO = Emotional Values; FUN = Functional Values; FWB = Food Waste Reduction Behavior; FWI = Food Waste Reduction Intention.

4.3 Hypothesis testing results

In order to check whether multicollinearity was a problem, the variance inflation factor was checked. The maximum VIF value was 4.394, below the required value of 5 [64]. The R^2 adjusted values of the five endogenous variables ranged from 0.242 to 0.621, and all Q^2_{predict} values were positive, ranging from 0.235 to 0.582, indicating the model's robustness and predictive relevance [64].

Hypothesis testing was performed using a bootstrapping approach of 5,000 resamples with effect size (f^2) calculation. Results provided empirical support for most proposed hypotheses, with the exception of H6b and H6c (Table 6). Specifically, EPT positively influenced FUN ($\beta = 0.340$, $p < 0.001$) and ECO ($\beta = 0.359$, $p < 0.001$), supporting H1a and H1b. TWO significantly affected FUN ($\beta = 0.457$, $p < 0.001$), ECO ($\beta = 0.255$, $p < 0.001$), and EMO ($\beta = 0.248$, $p < 0.001$), confirming H2a–H2c. IAT demonstrated positive effects on

ECO ($\beta = 0.431$, $p < 0.001$) and EMO ($\beta = 0.363$, $p < 0.001$), supporting H3a and H3b. Among the value constructs, FUN ($\beta = 0.322$, $p < 0.001$), ECO ($\beta = 0.313$, $p < 0.001$), and EMO ($\beta = 0.159$, $p < 0.001$) all significantly enhanced FWI, confirming H4a–H4c. FWI strongly predicted FWB ($\beta = 0.443$, $p < 0.001$), supporting H5. In addition, EG exerted significant direct effects on both FWI ($\beta = 0.209$, $p < 0.001$) and FWB ($\beta = 0.423$, $p < 0.001$), consistent with the hierarchical principle of moderated regression.

Specific indirect effects (Table 7) further confirmed that perceived values mediate the influence of influencer attributes on FWI: EPT (via ECO, $\beta = 0.112$; via FUN, $\beta = 0.109$), TWO (via ECO, $\beta = 0.080$; via EMO, $\beta = 0.039$; via FUN, $\beta = 0.147$), and IAT (via ECO, $\beta = 0.135$; via EMO, $\beta = 0.058$) all showed significant, non-zero bootstrap confidence intervals ($p \leq 0.001$). The standardized path coefficients for the structural model are illustrated in Figure 2.

Table 6. Evaluation of hypotheses testing

Construct	Q^2_{predict}	R^2	R^2 Adjusted	RMSE	MAE
Economic value (ECO)	0.582	0.589	0.586	0.651	0.508
Emotional value (EMO)	0.235	0.245	0.242	0.881	0.634
Functional value (FUN)	0.408	0.414	0.412	0.774	0.567
Food Waste Reduction Behavior (FWB)	0.280	0.416	0.412	0.853	0.692
Food Waste Reduction Intention (FWI)	0.339	0.626	0.621	0.818	0.631

Hypotheses	Path	β Coefficient	t-Value	p-Value	95% CI	f^2
H1a: Supported	EPT → FUN	0.340	8.255	0.000	[0.259-0.420]	0.180
H1b: Supported	EPT → ECO	0.359	12.065	0.000	[0.300-0.417]	0.272
H2a: Supported	TWO → FUN	0.457	11.818	0.000	[0.377-0.532]	0.326
H2b: Supported	TWO → ECO	0.255	7.652	0.000	[0.190-0.322]	0.137
H2c: Supported	TWO → EMO	0.248	5.935	0.000	[0.167-0.329]	0.075
H3a: Supported	IAT → ECO	0.431	12.897	0.000	[0.363-0.495]	0.393
H3b: Supported	IAT → EMO	0.363	7.997	0.000	[0.271-0.450]	0.160
H4a: Supported	FUN → FWI	0.322	7.939	0.000	[0.242-0.402]	0.157
H4b: Supported	ECO → FWI	0.313	7.088	0.000	[0.223-0.400]	0.102
H4c: Supported	EMO → FWI	0.159	3.807	0.000	[0.077-0.239]	0.036
H5: Supported	FWI → FWB	0.443	11.253	0.000	[0.365-0.518]	0.280
	EG → FWI	0.209	4.145	0.000	[0.113-0.315]	0.043
	EG → FWB	0.423	6.501	0.000	[0.297-0.550]	0.117
H6a: Supported	EG × FUN → FWI	0.131	3.836	0.000	[0.054-0.192]	0.069
H6b: Not Supported	EG × ECO → FWI	0.035	0.734	0.463	[-0.054-0.134]	0.002
H6c: Not Supported	EG × EMO → FWI	-0.027	0.690	0.490	[-0.112-0.050]	0.002
H6d: Supported	EG × FWI → FWB	0.076	2.721	0.007	[0.015-0.125]	0.015

Note: ECO = Economic Values; EG = Eco-guilt; EMO = Emotional Values; EPT = Expertise; IAT = Influencer Attractiveness; FUN = Functional Values; FWB = Food Waste Reduction Behavior; FWI = Food Waste Reduction Intention; TWO = Trustworthiness.

Table 7. Specific indirect effects

Path	β Coefficient	t-Value	p-Value	95% CI
EPT → ECO → FWI	0.112	6.270	0.000	[0.078, 0.148]
EPT → FUN → FWI	0.109	5.877	0.000	[0.075, 0.149]
TWO → ECO → FWI	0.080	5.504	0.000	[0.053, 0.110]
TWO → EMO → FWI	0.039	3.384	0.001	[0.018, 0.064]
TWO → FUN → FWI	0.147	6.107	0.000	[0.103, 0.197]
IAT → ECO → FWI	0.135	5.948	0.000	[0.091, 0.181]
IAT → EMO → FWI	0.058	3.424	0.001	[0.027, 0.093]

Note: ECO = Economic Values; EG = Eco-guilt; EMO = Emotional Values; EPT = Expertise; IAT = Influencer Attractiveness; FUN = Functional Values; FWB = Food Waste Reduction Behavior; FWI = Food Waste Reduction Intention; TWO = Trustworthiness.

4.4 Moderating effects

EG significantly strengthened the relationship between FUN and FWI ($\beta = 0.131, p < 0.001$), as well as between FWI and FWB ($\beta = 0.076, p = 0.007$), supporting H6a and H6d. However, the moderating effects of EG on the relationships between ECO and intention ($\beta = 0.035, p = 0.463$) and between EMO and FWI ($\beta = -0.027, p = 0.490$) were non-significant, resulting in the rejection of H6b and H6c.

4.5 Discussion

The findings indicate that influencer endorsement attributes, including EPT, TWO, and IAT, enhance consumers' perceived values toward sustainable consumption. This supports prior studies suggesting that influencers enhance green behavior through credibility and persuasive communication [38, 67-69]. EPT improves consumers' perceptions of food-related claims [70], while TWO strengthens FUN, ECO, and EMO by creating openness and reliability [71]. In addition, IAT contributes to consumers'

ECO and EMO through emotional attachment and perceived enjoyment [72].

The study also confirms that FUN, ECO, and EMO significantly influence FWI. FUN increases perceptions of usefulness and practical effectiveness [73], ECO highlights saving potential and efficiency [74], while EMO fosters pride, satisfaction, and moral warmth associated with sustainable behavior [9, 49]. These findings suggest that influencer-driven value perceptions can effectively encourage sustainable FWI. Consistent with prior research, FWI strongly predicts actual FWB [73-75].

Finally, EG acts as an important psychological mechanism that strengthens the relationship between FUN and FWI, as well as between FWI and FWB. Authentic and emotionally engaging influencer content may evoke EG, encouraging consumers to align their actions with environmental norms [21, 76, 77]. However, EG does not significantly moderate the effects of ECO and EMO on FWI, possibly because economic motivations are primarily utilitarian, while positive emotions may already sufficiently motivate sustainable behavior [78].

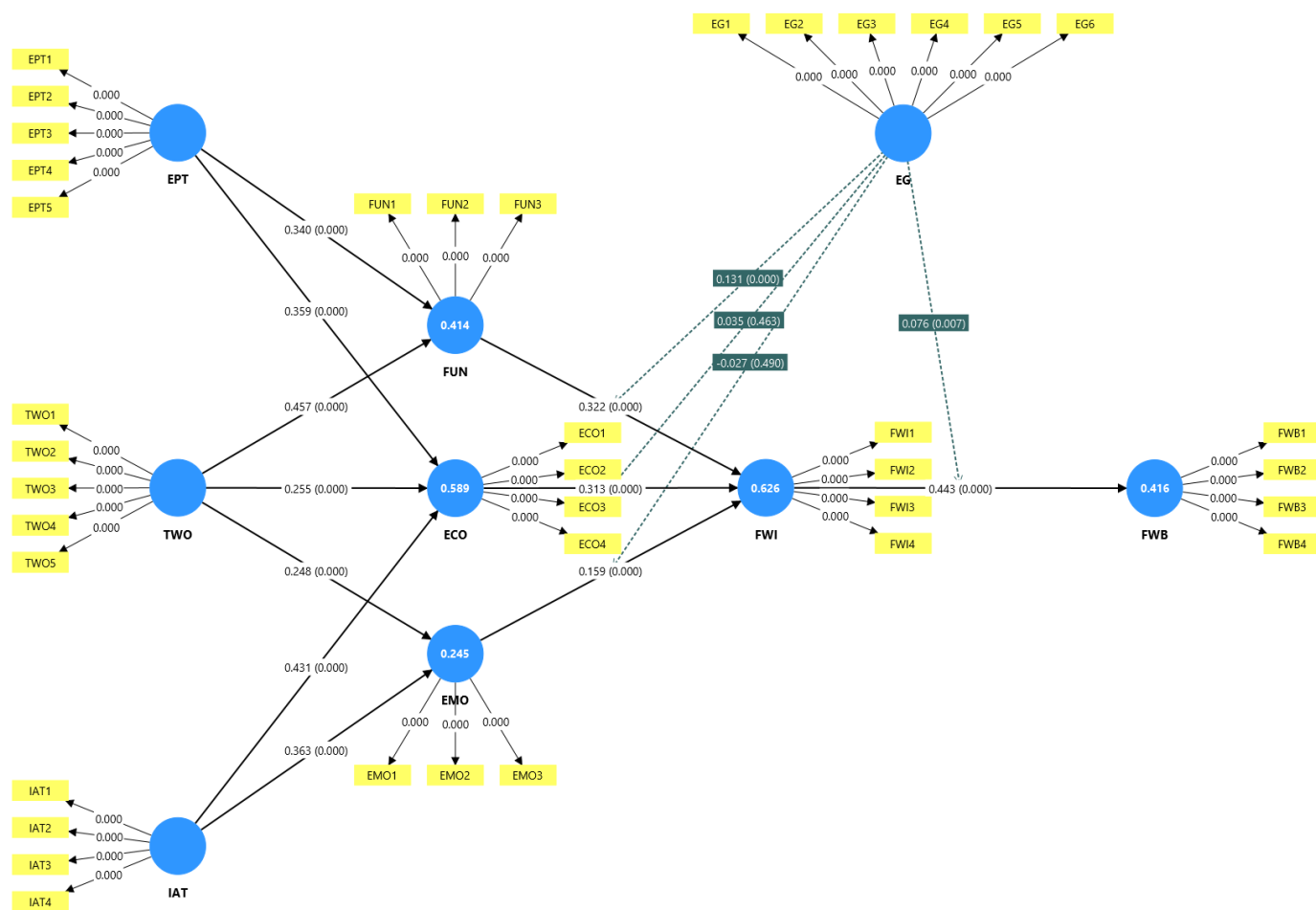


Figure 2. Structural model with standardized path coefficients

Note: ECO = Economic Values; EG = Eco-guilt; EMO = Emotional Values; EPT = Expertise; IAT = Influencer Attractiveness; FUN = Functional Values; FWB = Food Waste Reduction Behavior; FWI = Food Waste Reduction Intention; TWO = Trustworthiness.

5. CONCLUSIONS

5.1 Theoretical implications

This study advances theoretical understanding by extending the S-O-R framework to the context of influencer endorsement

and sustainable consumption, specifically food waste reduction. By conceptualizing influencer attributes as stimuli (S), perceived values as organisms (O), and FWI as responses (R), the study provides new insights into how influencer-related content can promote sustainable consumer behavior in the digital era.

The findings enrich current literature by demonstrating that influencer attributes, specifically TWO and IAT, could manifest significant effects on perceived value, which in turn foster FWI. This also indicates that the role of influencers is not only seen as a marketing figure but also as a sustainability communicator [79]. Additionally, through the incorporation of EG as a moderator, this study expands the understanding of how moral affect interacts with persuasive communication and eventually influences consumers' pro-environmental behaviors, contributing to the extension of the S-O-R model to moral consumption and digital social influence [80, 81].

5.2 Practical implications

The study provides profound insights and guidance for marketers and policymakers wishing to harness the power of social media advocacy for reducing food waste and promoting sustainable consumption. First, TWO plays a pivotal role in shaping value perceptions in food waste reduction messages. Brands and organizations should therefore collaborate with influencers who possess credible backgrounds in sustainability, nutrition, or environmental education [35]. Training programs and co-created content emphasizing EPT, transparency, and authenticity can also strengthen perceived trust [8]. A certification for "green influencers", supported by governmental or non-governmental organization partnerships, could also enhance message reliability and public trust.

Second, the emotional appeal of influencers' content, particularly through empathy and storytelling (ethical consumption stories, regret appeals), can effectively evoke and resonate with consumers' inner EG, motivating behavioral change [24, 82]. Influencers can use relatable narratives, visual contrasts like before-and-after waste imagery, or testimonials to make the consequences of food waste personally salient.

Finally, this study suggests that policymakers and sustainability organizations should consider the growing influence of digital ecosystems in shaping pro-environmental behavior [70]. For example, integrating influencer-related campaigns to disseminate widespread evidence-based content about the advantages of "ugly food" [83, 84], thereby reducing consumer bias and facilitating widespread attitude change.

5.3 Limitations and future research

Although the research makes a significant contribution to the emerging body of research on the promotion of sustainability, it is important to note the study's limitations. First, the study was limited to consumers in Vietnam. Future research may replicate the study in different cultures to test the generalizability of findings. Second, the study relied on self-reported measures to capture both FWB and the constructs assessed following exposure to the influencer stimulus. It is important to acknowledge that participant awareness of being assessed could have influenced their responses, leading to socially desirable answers, and that a gap between reported intention and actual behavior may persist; examining the impact of influencer-based messaging on actual food waste behavior would therefore be an interesting direction for future research. Relatedly, although multiple statistical checks confirmed that CMB is unlikely to be a concern in the present data, future studies could further strengthen causal inference by pairing self-reported intention with observed behavior data or adopting a time-lagged research design. Additionally, individual variables like age, income, and environmental

involvement may affect the emotional response to influencer content. Also, because influencer attributes were assessed as general dispositional perceptions anchored to a single illustrative post rather than manipulated across multiple message or platform conditions, causal claims about specific message features should be interpreted with caution. Moreover, the EG scale employed in the present study measures guilt associated with climate change in general, and not guilt associated with food waste specifically. This, although in line with the conceptualization of spillover of general EG into eco-friendliness in domain-specific situations, may fail to measure the contextual nature of the guilt associated with food waste specifically. Further research needs to focus on developing a food-waste-specific EG scale, based on the emotion measures from the food waste literature.

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APPENDIX

Table A1. Survey scales

Items	Measures
TWO1	Influencers who promote green consumption are trustworthy.
TWO2	Influencers who promote green consumption are reliable.
TWO3	Influencers who promote green consumption are knowledgeable.
TWO4	Influencers who promote green consumption provide confidence.
TWO5	Influencers who promote green consumption are ethical.
EPT1	Influencers know a lot about green consumption.
EPT2	Influencers are competent to make assertions about green consumption.
EPT3	Influencers are experts on green consumption.
EPT4	Influencers are aware of the effects of green consumption.
EPT5	Influencers' expertise motivates green consumption.
IAT1	Influencers promoting green consumption are physically attractive.
IAT2	Influencers promoting green consumption are glamorous.
IAT3	Influencers promoting green consumption are charming.
IAT4	Influencers promoting green consumption are sophisticated.
FUN1	I think following green consumption practices is helpful for me.
FUN2	I believe engaging in green consumption practices is useful for me.
FUN3	I think green consumption is functional for me.
EMO1	I think green consumption is fun.
EMO2	I believe green consumption is exciting.
EMO3	I think green consumption is entertaining.
ECO1	Green consumption is good for the money I spend.
ECO2	Green consumption is economical for the attributes it offers.
ECO3	Green consumption helps maintain a reasonable quality of living.
ECO4	Green consumption is safe and responsible for daily lives.
FWI1	I am willing to consider changing my food consumption habits to reduce food waste.
FWI2	I am willing to pay more for products that help minimize food waste.
FWI3	I am willing to pay more for food options that support waste reduction efforts.
FWI4	I will consider buying products that help prevent food waste because they are environmentally friendly.
FWB1	I typically buy food products in ways that help reduce food waste.
FWB2	I typically apply practices that save food and prevent waste.
FWB3	I typically reuse or repurpose leftover food whenever possible.
FWB4	I typically make food waste reduction part of my daily lifestyle.
EG1	The more I know about the human causes of climate change, the more things I feel guilty about.
EG2	It makes me feel uneasy that I am a part of a system that is amplifying climate change.
EG3	I feel guilty for not paying enough attention to the issue of climate change.
EG4	At times I feel some personal responsibility for the problems and unfolding impacts of climate change.
EG5	I blame myself for often behaving in an environmentally destructive way in situations where it could have been avoided.
EG6	I very often feel that what I do for the environment is not enough, because it cannot balance other negative behaviors.
AVE	Average Variance Extracted
CA	Cronbach's Alpha
CMB	Common Method Bias
CR	Composite Reliability
ECO	Economic Values
EG	Eco-guilt
EMO	Emotional Values
EPT	Expertise
IAT	Influencer Attractiveness
FUN	Functional Values
FWB	Food Waste Reduction Behaviors
FWI	Food Waste Reduction Intention
PLS-SEM	Partial Least Squares Structural Equation Modeling
RQ	Research Question
S-O-R	Stimulus–Organism–Response
TWO	Trustworthiness
VIF	Variance Inflation Factor