SOCIAL MEDIA INFLUENCERS AND GENERATION Z'S WILLINGNESS TO PARTICIPATE IN THE CIRCULAR ECONOMY: THE MODERATING ROLE OF PERCEIVED GREENWASH

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Abstract

Research purpose:
Grounded in the Stimulus Organism Response (SOR) framework, Persuasion theory, and Inspiration theory, this study examines how social media influencers (SMIs) shape Generation Z's willingness to participate in the Circular Economy (CE). A moderated serial mediation model is developed in which inspiration and awareness function as sequential mediators, while perceived greenwash (GW) moderates both direct and indirect effects of SMIs on CE participation.

Research motivation:
As environmental concerns intensify, the CE has become a central approach to reducing waste and promoting sustainable consumption. At the same time, SMIs have emerged as powerful agents of influence, shaping pro-environmental behaviors among digital-native audiences. However, the growing phenomenon of greenwashing, when sustainability claims lack authenticity, poses a serious threat to influencer credibility. Yet, little is known about how perceived GW alters the persuasive process linking SMIs' influence to CE-oriented engagement, especially in emerging economies such as Vietnam.

Research design, approach, and method:
A quantitative survey was conducted with 414 valid responses from Generation Z participants in Ho Chi Minh City. The questionnaire measured perceived influencer impact, inspiration, awareness, perceived GW, and CE willingness. Data were analysed using Partial Least Squares Structural Equation Modelling (PLS SEM) with 5,000 bootstrap resamples to test the moderated serial mediation framework.

Main findings:
Results reveal that SMIs enhance willingness to participate in CE through a sequential process of inspiration leading to greater awareness. However, when followers perceive high levels of greenwashing, these indirect effects weaken significantly, indicating that GW diminishes both the inspirational appeal and the awareness-raising capacity of influencers. This finding highlights perceived authenticity as a critical condition for translating digital influence into sustainable action.

Practical/managerial implications:
The study underscores that authentic, transparent, and evidence-based influencer communication can effectively motivate CE participation among young consumers. Brands should avoid symbolic or misleading sustainability claims that trigger greenwashing perceptions, while policymakers and educators can leverage credible influencers to normalize circular practices and nurture long-term pro-environmental mind set.

Keywords: Social Media Influencers, Circular Economy, Perceived Greenwashing, Generation Z.

1. INTRODUCTION

The United Nations projections indicate that the global population may reach 10 billion by 2050, driving a 70% rise in food demand and intensifying environmental pressures as agriculture already contributes roughly one third of global carbon emissions and nearly 90% of deforestation (Strzyżyńska, 2022). Simultaneously, statistics indicate that the planet's

renewable resources for an entire year were depleted in just eight months (S.Galan, 2025). Additionally, the linear economy has exerted severe pressure on global ecosystems (Vidal et al., 2024). In light of the challenges posed to the resources of future generations, the circular economy (CE) has emerged as a sustainable alternative to the traditional economic model, addressing consumption needs while decoupling economic growth from environmental degradation. According to the Foundation (2024), transitioning to a CE model could save countries approximately €575 billion annually and generate hundreds of billions in broader economic benefits for businesses, cities, and citizens by 2035.

Alongside population growth, the number of social media users has risen rapidly, 62.3% of the global population in January 2024, transforming marketing trends and strategies. This increase has enhanced consumer recognition of social media influencers (SMIs) who shape their perceptions (Ampornklinkaew, 2025). Previous research by Kim, Park, and Kim (2023) indicated that, due to social status similarities, consumers consider SMIs more relatable than conventional advertisements (Kim et al., 2023). SMIs are not only content creators but also act as "ambassadors" promoting sustainable lifestyles by sharing eco-friendly messages. Previous studies prove that consumers are likely to trust influencers more than traditional advertisements (Djafarova & Rushworth, 2017). Recognized for their expertise, recommendations from SMIs are often trusted by followers, facilitating relationship-building (Uzunoğlu & Kip, 2014).

To enhance awareness of the circular economy (CEA), it is essential to cultivate a cultural environment in which CE practices are both valued and actively promoted (Yaoyi Liu et al., 2022). SMIs, known for their wide reach and emotional resonance, have increasingly been recognized as powerful actors in shaping sustainability narratives and encouraging green behavior through authenticity and parasocial interactions (Boerman, Meijers, & Zwart, 2022; Djafarova & Foots, 2022; Gonella, Godinho Filho, Ganga, Latan, & Jabbour, 2024; Levin & Anning-Dorson, 2024; Lou & Yuan, 2019). However, there has been scant attention to how SMIs influence consumers' engagement with CE practices. Unlike generic green consumption, CE emphasizes reuse, recycling, and circular design, involving distinct motivations and behavioral demands that current literature rarely addresses. In line with this, Munaro, Barcelos, and Maffezzolli (2024) highlights that most existing research on influencer engagement remains concentrated in high-profile economic sectors such as fashion, tourism, and food, with scarce attention to emerging environmentally conscious domains like the sharing economy and the circular economy. This further underscores the importance of examining the role of SMIs in promoting CE-related behaviors, with a focus on younger demographics such as Gen Z (Munaro et al., 2024).

Generation Z, as a socially conscious and digitally native cohort, plays a pivotal role in driving sustainable consumption trends (Gomes & Casillas, 2025). They are particularly active on social media platforms, where they engage with influencers perceived as relatable and trustworthy (Le, Van Nguyen, & Stokes, 2025). Research shows that Gen Z demonstrates a strong interest in sustainable behaviors and openness to circular models (Gomes & Casillas, 2025; Trang, Thang, Nguyen, & Nguyen, 2025). However, despite their digital proximity to SMIs, empirical evidence remains scarce on how SMIs shape Gen Z's intentions and actual participation in circular behaviors. As noted by (Nikolić, Paunović, Milovanović, Lozović, & Đurović, 2022), further research is needed to clarify the extent and conditions under which influencers affect Gen Z's CE awareness and engagement.

Inspiration (IPR) is closely linked to influencers and their impact on consumer participation in environmentally friendly behaviors (Bulmer, Palakshappa, Dodds, & Harper, 2024; Dekoninck & Schmuck, 2025; Hussain et al., 2025; Johnstone & Lindh, 2018; Koivunen, Haanpää, & Saraniemi, 2025; Munaro et al., 2024). However, there is a lack of understanding of whether SMIs' inspiration can facilitate CEA and ultimately foster willingness to participate in circular economy (WPCE) (Borrello, Pascucci, Caracciolo, Lombardi, & Cembalo, 2020; Gonella et al., 2024; Pereira et al., 2024; Van Langen et al., 2021). Likewise, although scholars have observed that perceived greenwash (GW) reduces trust and discourages participation in pro-environmental behaviors (Ahmad & Zhang, 2020; Y.-S. Chen & Chang, 2013; Munaro et al., 2024; Pereira et al., 2024), unveiling GW from SMIs requires further effort (Le et al., 2025; Munaro et al., 2024). The possible interactions among GW, IPR, and awareness are still in their infancy and warrant further investigation.

Given this background and to address the identified gaps, this study builds its theoretical foundation on the Stimulus-Organism-Response (SOR) framework, together with Persuasion and Inspiration theories, to investigate how SMIs influence CEA and WPCE among Gen Z consumers. The study advances the literature in three key ways. First, based on existing literature, it represents one of the earliest examinations of the direct impact of SMIs on Generation Z's WPCE in Vietnam., a developing-country context. Second, by leveraging the aforementioned theories, we explore the indirect pathways through which SMIs shape WPCE, focusing on the sequential and serial mediation roles of Inspiration (IPR) and CEA. Third, this study addresses the underexplored relationships among GW, IPR, and CEA by developing a complicated moderated serial mediation model that assesses the moderating role of GW in the indirect link between IPR and CEA.

Regarding the substantial environmental impact of consumption, this research aligns with multiple United Nations Sustainable Development Goals, particularly SDG 8 (Decent Work and Economic Growth), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), and SDG 17 (Partnerships for the Goals). The importance of this research stems from its ability to advance understanding of how SMIs can effectively promote CEA and WPCE, particularly among Generation Z; the resulting insights can enhance the development of more credible and impactful

influencer strategies that foster environmentally responsible behaviors and facilite the broader transition toward a regenerative circular economy across stakeholders.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Literature review

The Stimulus-Organism-Response (SOR) model proposed by Mehrabian and Russell (1974), represents the causal relationship caused by environmental impulses that can impact the internal emotions of the organism, leading to its responses to a particular product or service, including approach or avoidance (Abumalloh, Halabi, & Nilashi, 2025). This framework is applied in many fields to understand people's behavioural tendencies, along with its three elements stimulus, organism, and response (Yanfeng Liu, Cai, Ma, & Wang, 2023). The Stimulus (S) of the SOR model represents external factors arising from the surrounding environment (Kamboj, Sarmah, Gupta, & Dwivedi, 2018). A mediating phase between the stimulus and response is the organism (O), which is an inner condition of an individual represented by emotional and cognitive states (Basha, Aw, & Chuah, 2022). The last factor in the SOR model is the response (R), which is the result of internal mechanisms and can also be called behavior (Qiu et al., 2023). In this context, we propose that perceived influence of SMIs (PISIMI) as external stimuli might particularly affect factors related to consumers' internal emotion (IPR and CEA), which can moderate their WPCE.

Persuasion is understood as the process of influencing the attitudes and behaviors of others, often appearing in academic studies in a variety of contexts, including shopping behavior, political choices, or traffic safety compliance (Gardikiotis & Crano, 2015). Persuasion Theory, proposed by Hovland in 1953, aims to explore the ways in which an individual can influence the attitudes and behaviors of others through the persuasive power of media. This theory emphasizes the role of four main factors: who is the communicator, what is the content of the message, what medium of transmission is used, and who is the This study uses Persuasion Theory as a key theoretical basis to explain the role of SMIs as a source of persuasive messaging in promoting sustainable consumer behavior and shaping consumer awareness of the CE.

Customer Inspiration Theory considers customers as recipients of external stimuli and defines inspiration as a transient motivational state that enables individuals to convert marketing-driven ideas into internal pursuits or goal directed actions. In our context, this applies to how individuals transition from being externally stimulated by SMIs to developing an intrinsic drive to adopt sustainable behaviors aligned with CE values (Izogo & Mpinganjira, 2020). This conceptualization is supported by an increasing amount of research suggesting that inspiration acts as a core mediating mechanism in translating external influences into sustainable intentions and behaviors (C.-P. Chen, 2024; Fang, Xie, Yu, Huang, & Zhang, 2023; Tsaur, Yen, & Lin, 2022). In the context of sustainability, inspiration has been recognized as a powerful motivator (Horng, Liu, Chou, Yu, & Hu, 2024; Walker & Moscardo, 2014). Accordingly, this study positions customer inspiration as the pivotal channel through which credible and influential SMIs cultivate public engagement with CE principles.

CE aims to optimize resource use, minimize waste, and extend the lifecycle of goods and materials (Khajuria et al., 2022). When referring to CE and the transition from a linear economy, which necessitates not only institutional and industrial restructuring but also a profound shift in public awareness and behavior (Almulhim & Abubakar, 2021). Perceived Influence of SMIs is understood as the extent to which consumers perceive that SMIs can influence their consumer consciousness and behaviors. According to Munir and Watts (2025), SMIs can raise consumer awareness and contribute to shaping purchasing intentions through their informational content, entertainment value, professional knowledge, trustworthiness, appeal, similarity, experience, and other related characteristics (Lou & Yuan, 2019). Individual awareness plays a key determinant in CE, they need to identify the worth and importance of recycling used products (Sujata, Khor, Ramayah, & Teoh, 2019). This not only helps reduce resource waste and generates positive environmental impacts but also saves financial costs and fosters creativity within CE practices (Gonella et al., 2024). Raising public awareness of CE is crucial for promoting behavioral change, encouraging individual environmental accountability, and facilitating a wider societal shift toward circular practices (Kevin van Langen et al., 2021). Surveys conducted in Vietnam confirm these findings, showing that greater environmental awareness and positive mindsets significantly enhance consumers' willingness to engage in CE related activities (Trần, Phan, Lê, & Trần, 2022). In contrast, Gonella et al. (2024) emphasized that psychological obstacles - such as restricted cognition - impede individuals' willingness to participate in CE. Willingness to participate in CE practices is conceptualized as a form of consumer behavioral intention reflecting readiness to adopt sustainable behaviors that contribute to closing the production and consumption loop (Borrello, Caracciolo, Lombardi, Pascucci, & Cembalo, 2017; Ram, Ahmad, Toth-Peter, Torres de Oliveira, & Acharyulu, 2025). For instance, Borrello et al. (2017) found that most Italian households showed strong interest in food waste recycling initiatives, while studies in the e-commerce sector revealed a high likelihood of consumers participating in closed loop packaging systems, with environmental concern and favorable attitudes acting as key drivers. Inspiration is defined as a psychological construct characterized by three core features: evocation, drive, and transcendence (Thrash & Elliot, 2003). Hussain et al. (2025) study demonstrates that inspiration is closely linked to participation in environmentally friendly behaviors. Within the framework of CE, inspiration can evoke a sense of capability and purpose, driving

increased intentions to engage in sustainable behaviors, transforming individuals from passive observers into active participants in sustainability efforts.

Beyond serving as a communication medium, social media has gradually become an integral part of everyday life, shaping the selection and consumption habits of Generation Z (Zafar, Shen, Ashfaq, & Shahzad, 2021). Referring to Gen Z, Munaro et al. (2024) argue that this generation demonstrates a significantly higher level of concern for environmental and corporate ethics issues than previous generations. In addition, having grown up in a modern environment where technology and social networks thrived, Gen Z has developed an open, multi-dimensional mindset and the ability to rapidly grasp social trends (Gomes, Lopes, & Nogueira, 2023). This demonstrates that SMIs hold substantial potential in forming attitudes and advancing sustainable consumption behaviors among Gen Z.

However, the increasing prevalence of "greenwashing" poses a notable challenge (Williams, 2024). If followers detect signs of greenwashing, their trust in SMIs may diminish, fostering skepticism and hindering sustainable behaviors (Le et al., 2025). This phenomenon not only creates a sense of betrayal on the part of consumers towards SMIs (Y.-S. Chen & Chang, 2013), but also makes them feel guilty for inadvertently supporting unethical behavior (Patil & Rahman, 2023). Therefore, while SMIs have the potential to inspire CE practices, their effectiveness may be negatively moderated by perceived greenwash.

2.2 Hypothesis development

The digital age has fostered an environment where people can easily find, connect, and interact with each other in various formats - text, images, and videos - based on shared needs and interests (C.-W. Ki, S. Park, & Y.-K. Kim, 2022). In this context, consumers are increasingly engaging in online communication and expect interaction and feedback from others (Uzunoğlu & Kip, 2014). Through such exchanges, SMIs have been shown to stimulate and inspire their audiences (Oh, Roumani, Nwankpa, & Hu, 2017). Recent studies have explored the link between SMIs and sustainable consumer behavior. Fang et al. (2023) found that viewers often feel inspired toward sustainability and motivated to engage in environmental activities due to the persuasive influence of SMIs. Drawing on the SOR theory, Hussain et al. (2025) identified the perceived influence of SMIs as a stimulus that significantly impacts sustainable tourism practices. Similarly, C.-W. C. Ki, S. Park, and Y.-K. Kim (2022) concluded that the reliability of SMI content can motivate consumers. In the context of climate change, Boerman et al. (2022) demonstrated that influencer-message congruence favorably affects Instagram users' pro-environmental intentions. Likewise, Rodrigo and Mendis (2023) showed that SMIs with high attractiveness, credibility, and deep knowledge of green products can persuade consumers to engage in green behaviors. Considering the outcomes discussed above, the following hypothesis is proposed:

H1: Perceived Influence of SMIs is positively associated with Willingness to participate in the CE.

Within the consumption context, individuals often look to those with whom they feel close as sources of inspiration, forming beliefs about styles, trends, and products (Wang, Yu, & Wei, 2012). Empirical evidence also supports this linkage: He, Liu, and Li (2021) showed that tourists who experience inspiration are more likely to engage positively with attractions, while Landis et al. (2009) demonstrated that inspired individuals tend to act in pro-social and pro-relational ways. A growing body of research highlights the mediating role of inspiration (IPR) in consumer decision-making. For instance, Kwon and Boger (2021) reported that consumer inspiration significantly mediated the effect of eco-friendly hotel brand experience on sustainable intention, consistent with the S–O–R framework. More recently, Li, Zhou, Zhang, Zhou, and Wen (2025) confirmed that IPR derived from images generated by Virtual AI Streamers stimulated viewers' purchase intentions. In the sustainability domain, Hussain et al. (2025) demonstrated that the perceived influence of SMIs positively affects travelers' sustainable behaviors, with inspiration toward sustainability acting as a critical mediator. These findings align with earlier work (He et al., 2021; Kwon & Boger, 2021), reinforcing the view that inspiration not only connects stimuli with psychological engagement but also translates into pro-environmental responses. Accordingly, we propose the hypothesis:

H2: Inspiration mediates the positive association of perceived influence of SMIs on willingness to participate in the CE.

Previous research has shown that increased perceived impact from SMIs aligns with stronger intentions to embrace ethical and sustainable practices (Hussain et al., 2025; Zhou, Leong, Chen, & Luo, 2025). However, this impact does not always lead to specific behavior unless consumers have adequate knowledge and comprehension of sustainability concepts. Johnstone and Lindh (2018) argue that SMIs play an important role in raising sustainability awareness among younger demographics by delivering consistent messages on digital platforms. Similarly, Gonella et al. (2024) highlight that enhancing CE awareness reinforces individuals' intrinsic commitment to sustainable behaviors, thereby narrowing the gap between environmental knowledge and practical implementation. Furthermore, existing empirical evidence indicates that people's attitudes and behavioral intentions toward sustainability are notably affected by their level of awareness (D'Amato et al., 2017; Trần et al., 2022). In this context, the function of SMIs focuses not so much on prompting immediate behavior but rather on fostering the essential awareness that precedes taking action. Lacking sufficient understanding of CE, even powerful SMIs may struggle to drive significant behavioral change. Therefore, being aware of the Circular Economy is a crucial step in transforming perceived social effect into actual behavioral intentions. This

intermediary function is crucial for comprehending how external factors such as SMIs are absorbed and responded to by consumers. Thus, this research proposes the hypothesis:

H3: Awareness of Circular Economy mediates the positive association of Perceived Influence of SMIs on Willingness to participate in Circular Economy.

Recent studies have consistently demonstrated that inspiration derived from influencer content significantly predicts consumers' sustainable behavioral engagement (Fang et al., 2023; P. M. B. Nguyen, Pham, & Truong, 2025). Specifically, Fang et al. (2023) found that travel inspiration mediates the effect of presenter attractiveness in social media videos on travel intention, emphasizing the emotional and motivational role of inspiration in digital contexts. Similarly, P. M. B. Nguyen et al. (2025) found that source credibility influences sustainable travel planning via inspiration, reinforcing the view that inspiration functions as a psychological bridge that translates external stimuli into purposeful action. Furthermore, awareness of CE complements this emotional process by providing the necessary cognitive foundation for informed and committed participation in sustainable practices. Gonella et al. (2024) highlight that CE awareness is a fundamental predictor of individual sustainability commitment, serving as a cognitive transformation mechanism that connects inspiration to action. This aligns with Trần et al. (2022), who emphasize that positive attitudes driven by awareness lead to a greater willingness to purchase CE products, thereby indicating behavioral readiness. Thus, the combination of inspiration and CE awareness forms a sequential cognitive - affective mechanism through which influencer-driven engagement is internalized and converted into meaningful behavioral intention.

The dual role of inspiration and awareness is consistent with findings from S-O-R grounded studies that reveal how environmental stimuli must pass through layered internal processes before leading to behavioral outcomes (Kwon & Boger, 2021; Tsaur et al., 2022). Despite these insights, most prior studies have treated inspiration and awareness in isolation, with few empirically examining their integrated, serial mediating roles-especially in the context of the Circular Economy. Therefore, the following hypothesis is proposed:

H4: Inspiration and Awareness of Circular Economy act as serial mediating factors in the positive relationship between Perceived Influence of SMIs and Willingness to participate in Circular Economy.

Recent research emphasizes that although SMIs can promote pro-environmental behaviors and CE participation, the presence of greenwashing can erode trust, reduce inspiration, and diminish willingness to engage in sustainable actions (Szabo & Webster, 2021). Findings by Choudhury, Islam, and Sujauddin (2024) and Adamkiewicz, Kochańska, Adamkiewicz, and Łukasik (2022) also reveal that greenwashing hinders progress toward both CE and sustainable development.

Furthermore, numerous studies have demonstrated that greenwashing significantly moderates consumer responses to sustainability messages. For instance, demonstrated that perceived greenwash causes green confusion, thereby diminishing the influence of perceived guilt on green purchasing intentions. Similarly, greenwashing acts as an important moderator in the link between environmental concern and consumers' green purchase behavior. Accordingly, while SMIs can inspire sustainable behaviors, greenwashing may undermine the authenticity of the messages they intend to convey. For individuals with strong perceptions of greenwashing toward SMIs, the influence of Perceived Influence of SMIs on Awareness of the Circular Economy may be weakened, making them less willing to participate in CE. Therefore, we propose the following hypotheses to capture this moderating effect:

H5: Perceived Greenwash moderates the positive relationship between Perceived Influence of SMIs and Inspiration

H6: Perceived Greenwash moderates the positive relationship between Perceived Influence of SMIs and Awareness of Circular Economy

H7: Perceived Greenwash moderates the mediating association of Inspiration between Perceived Influence of SMIs and Willingness to participate in Circular Economy

H8: Perceived Greenwash moderates the mediating association of Awareness of Circular Economy between Perceived Influence of SMIs and Willingness to participate in Circular Economy

H9: Perceived Greenwash moderates the serial mediating association of Inspiration and Awareness of Circular Economy between Perceived Influence of SMIs and Willingness to participate in Circular Economy

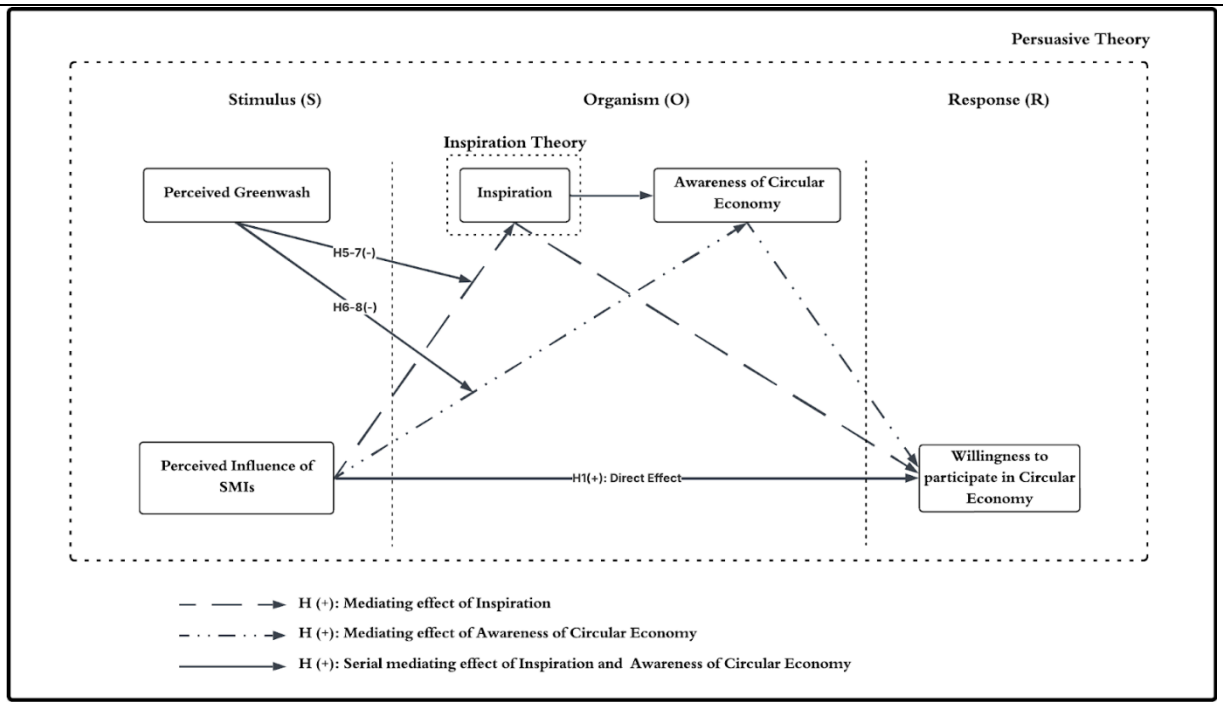


Fig. 1. Proposed research model (Source: Authors' work).

3. METHODOLOGY

3.1 Research process

This study utilized a mixed-methods approach, integrating qualitative interviews and quantitative surveys to develop and enhance the research model and questionnaire. Data were collected from Gen Z respondents in Ho Chi Minh City through online platforms. PLS-SEM was applied to assess measurement and structural models, including reliability, validity, and mediation effects, while SPSS was used to analyze demographic characteristics.

3.2 Research data

According to the "10-times rule" in PLS-SEM (J. Hair, Ringle, & Sarstedt, 2011), the study required a minimum of 370 observations. Using convenience sampling via online surveys on multiple social media platforms, 444 responses were collected from July 10 to July 25, 2025. After screening, 414 valid responses were retained and subsequently prepared for analysis in SmartPLS 4.1.1.4 and SPSS 27.0.1.

3.3 Research method

The research employed PLS-SEM using SmartPLS 4.1.1.4 to evaluate the proposed hypotheses, given its appropriateness for intricate models, moderated serial mediation, and higher-order constructs (J. Hair & Alamer, 2022; J. F. Hair, Risher, Sarstedt, & Ringle, 2019). Bootstrapping with 5,000 subsamples was applied to assess direct, indirect, and interaction effects, ensuring robust inference (J. Hair et al., 2011). Additionally, SPSS 27.0.1 was used for descriptive statistical analysis to complement the interpretation of demographic data.

3.4 Questionnaire design

The questionnaire consisted of 11 constructs and 37 items, each 33 measured on a seven-point Likert scale, from 1 ("strongly disagree") to 7 ("strongly agree").

The measuring items for Perceived Influence of SMIs (3 items), Willingness to Participate in the CE (WPCE) (3 items), and Perceived Greenwashing (GW) (5 items) were modified from Hussain et al. (2025), Trần et al. (2022), and (Le et al., 2025), respectively. Inspiration was treated as a second-order construct, comprising two first-order constructs: Inspired by (5 items) and Inspired to (5 items), adapted from Hussain et al. (2025). We modeled Awareness of CE (CEA) as a second-order construct comprising six first-order dimensions: General Awareness (1 item), Waste Management (2 items), Rational Use of Resources (3 items), Technical Cycle (4 items), Use of Sustainable Products or Packaging (2 items), Dematerialisation and Collaborative Consumption (4 items), based on the study of Godinho Filho, Gonella, Latan, and Ganga (2024).

Each dimension represents a specific aspect of consumers' awareness of CE related principles and practices. The research

team also applied a forward-backward translation method to translate the measurement items into Vietnamese, following the guidelines of McGorry (2000), to ensure linguistic and contextual accuracy.

3.5 Data analysis method

The data analysis followed a systematic procedure using SPSS for descriptive statistics and PLS-SEM for measurement and structural model assessment. Reflective models were evaluated for reliability, validity, and discriminant validity (J. F. Hair et al., 2021), while formative models were tested for convergent validity, collinearity, and indicator significance. Structural models were further examined for collinearity, path significance, explanatory power (R^2), as well as mediating and moderating effects, with bootstrapping (5,000 subsamples) ensuring robust inference. To further investigate the integrated effects of interactions under varying boundary conditions, conditional indirect effects were assessed through path analysis using the PROCESS macro v4.2 add-in within SPSS 20.0. This approach ensured methodological rigor and reliable testing of the proposed hypotheses.

4. RESULTS AND DISCUSSION

4.1 Results

Measuring independent variables and dependent variables with the same tools and scales can lead to common method bias (Sreen, Mehrotra, Alghafes, & Agarwal, 2025). According to Das, Saha, Jebarajakirthy, Kalai, and Debnath (2022), common method bias can skew the results, causing the study to lose credibility and invalidity. Based on the suggestions of Bhardwaj, Sreen, Das, Chitnis, and Kumar (2023); Kock and Hadaya (2018); Sreen et al. (2025)we apply a combination of procedural approaches and statistical approaches to control and mitigate this risk. Hence, the questionnaire is carefully designed and clear, incorporating techniques to limit or eliminate the possibility of common method bias. The layout is divided into several sections, the questions are randomly arranged to create psychological distance and enhance the concentration of survey participants. After collecting data, we conduct PLS-SEM estimation; all Inner VIF values are less than 3.3, indicating that common method bias is not the main concern in the data.

A total of 444 responses were obtained, of which 414 met the validity criteria and were retained for further analysis. The sample was predominantly female (71%) and largely composed of individuals born after 2000 (97.6%), with university students representing the overwhelming majority (94.4%). In terms of income, most respondents earned between 2 and 5 million VND per month (44%), followed by those earning less than 2 million VND (34.5%). Social media usage was highly frequent, with over 75% of participants reporting more than four daily logins. Notably, 90.8% of respondents reported following at least one social media influencer, underscoring the relevance of SMIs to this demographic.

Table 1. Descriptive analysis

Category	Variable	Frequency (N=414)	Percentage
Gender	Female	294	71 %
	Male	120	29 %
Birth year	1997-2000	10	2.4 %
	2001-2007	404	97.6 %
Education	Bachelor's degree	391	94.4 %
	Postgraduates	7	1.7 %
	Diploma or below	16	3.9 %
Monthly income (million VND/month)	<2	143	34.5 %
	>15	11	2.7 %
	11-15	13	3.1 %
	2-5	182	44 %
	6-10	65	15.7 %

	<4	14	3.4 %
	>15	95	22.9 %
	12-15	49	11.8 %
	4-7	135	32.6 %
Social media usage frequency (times/day)	8-11	121	29.2 %
	Follow at least one influencer	376	90.8 %
Follower density	Do not follow any influencers	38	9.2 %

Table 2 shows that all measurement scales achieved acceptable levels of convergent validity and reliability. In particular, every factor loading exceeded the recommended benchmark of 0.7, confirming adequate indicator reliability. Cronbach's alpha values were all above 0.854, composite reliability scores surpassed 0.858, and AVE values exceeded 0.726, collectively indicating strong reliability and convergent validity (Hair Jr et al., 2021). Moreover, each dimension of IPR and CEA demonstrated satisfactory outer weights and outer loadings, while all VIF values remained well below the cut-off value of 5 (Diamantopoulos & Siguaw, 2006), suggesting the absence of multicollinearity concerns.

Table 2. Factor loadings, reliability analysis and convergent validity.

Factor	Factor Loadings	Outer Weights	Outer Loadings	VIF	Cronbach's Alpha a	Composite Reliability	AVE
IPR - IPRB	0.831 – 0.873	0,661	0,961	2,194	0.906	0.930	0.726
IPR - IPRT	0.844 – 0.893	0,407	0,895	2,194	0.921	0.941	0.760
CEA - GA	-	0,361	0,887	2,334	-	-	-
CEA - DCC	0.880 – 0.901	0,218	0,841	2,641	0.913	0.938	0.792
CEA - RUR	0.901 – 0.919	0,172	0,858	3,076	0.897	0.936	0.829
CEA - TC	0.881 – 0.914	0,062	0,845	3,547	0.921	0.944	0.808
CEA - USPP	0.944 – 0.948	0,156	0,869	3,439	0.883	0.945	0.895
CEA - WM	0.949 – 0.950	0,191	0,843	2,599	0.891	0.949	0.902
GW	0.878 – 0.897	-	-	-	0,935	0,939	0,794
PISMI	0.866 – 0.903	-	-	-	0,854	0,858	0,774
WPCE	0.877 – 0.921	-	-	-	0,887	0,89	0,816
Note: VIF: variance inflation factor, AVE = average variance extracted.							

Discriminant validity was examined using the Heterotrait-Monotrait (HTMT) ratio of correlations (Henseler, Ringle, & Sarstedt, 2015). For the lower-order constructs (Stage 1, Table 3), the HTMT values ranged from 0.603 to 0.864. All values fell below the conservative threshold of 0.9, suggesting that each construct is empirically distinct from the others and no issues of discriminant validity are present at this level.

For the constructs examined in Stage 2 (Table 4), which include GW, PISMI, WPCE, and the interaction term (GW × PISMI), the HTMT values ranged from 0.020 to 0.706. All values are well under the conservative threshold of 0.85, indicating strong discriminant validity among these constructs.

Taken together, the HTMT results from both stages confirm that discriminant validity is established across all constructs in the model.

Table 3. Assessing discriminant validity: Heterotrait-Monotrait Ratio (HTMT) ratios.

Factor	1	2	3	4	5	6	7	8
1.DCC	-							
2.GA	0,651	-						
3.IPRB	0,688	0,65	-					
4.IPRT	0,653	0,613	0,807	-				
5.RUR	0,745	0,709	0,663	0,657	-			
6.TC	0,797	0,696	0,672	0,637	0,83	-		
7.USPP	0,813	0,73	0,673	0,628	0,802	0,864	-	
8.WM	0,707	0,695	0,658	0,603	0,801	0,755	0,793	-

Note: DCC = dematerialization; GA = general awareness; IPRB = inspired by; IPRT = inspired to; RUR = rational use of resources; TC = technical cycle; USPP = use of sustainable product or packaging; WM = waste management

Table 4. Assessing discriminant validity: Heterotrait–Monotrait Ratio (HTMT) ratios.

Factor	1	2	3	4
1. GW	-			
2. PISMI	0,524	-		
3. WPCE	0,557	0,706	-	
4. GW x PISMI	0,02	0,129	0,235	-

Note: GW = perceived greenwash; PISMI = perceived influence of social media influencers; WPCE = willingness to participate in the circular economy; GW × PISMI = interaction between perceived greenwash and perceived influence of social media influencers

The full structural model was evaluated using a bootstrapping procedure with 5,000 resamples, which is appropriate for non-normal data conditions (Streukens & Leroi-Werelds, 2016). Regarding explanatory power, the model yielded R^2 values of 0.592 for CEA, 0.600 for IPR, and 0.644 for WPCE. Following Cohen, Cohen, West, and Aiken (2013), these values indicate substantial explanatory power for all three endogenous constructs in a social science context. The adjusted R^2 values (0.588, 0.597, and 0.641, respectively) confirm the model's robustness after accounting for the number of predictors.

The results from hypothesis testing showed that several structural paths were statistically significant ($p < 0.05$), including CEA → WPCE ($\beta = 0.212$, $t = 3.192$), IPR → CEA ($\beta = 0.310$, $t = 3.409$), and IPR → WPCE ($\beta = 0.140$, $t = 2.991$). In contrast, the moderation effects of GW × PISMI on both CEA and IPR, as well as several direct paths (e.g., GW → CEA, GW → IPR, PISMI → WPCE), were non-significant.

To complement these findings, f^2 values were calculated for each relationship. Several predictors demonstrated medium to large effect sizes ($f^2 > 0.15$), supporting their substantive impact on endogenous variables, while others exhibited small or negligible effects ($f^2 < 0.02$). These results provide further evidence that the null hypotheses for key relationships can be rejected, supporting the alternative hypotheses (Iacobucci, Popovich, Moon, & Román, 2023).

Following established guidelines from SEM experts, we evaluated each hypothesis by examining the beta coefficients (β), standard deviations (STDEV), p-values, and t-statistics, applying a 5% significance threshold for a one-tailed test. The analytical approach was informed by the recommendations of Henseler (2020); Mehmetoglu and Venturini (2021). Standardized estimates were used to assess all hypotheses within the full structural model. As shown in [Table …] , most hypotheses were supported, with the exception of the direct path from PISMI to WPCE (H1) and the indirect path from PISMI to WPCE via CEA (H3), which did not reach statistical significance ($p > 0.05$).

Notably, several indirect relationships were significant. For example, PISMI demonstrated a substantial indirect influence

on WPCE through IPR (β = 0.270, STDEV = 0.043, p < 0.001) and through the sequential path IPR → CEA (β = 0.156, STDEV = 0.030, p < 0.001). In terms of moderation, the interaction term GW × PISMI significantly affected multiple mediated pathways, including GW × PISMI → IPR → WPCE (β = –0.025, p = 0.039) and GW × PISMI → CEA → WPCE (β = –0.045, p = 0.008). These findings highlight the intricate mediating and moderating processes that connect PISMI, IPR, CEA, and WPCE in the proposed framework.

Table 5. Results of hypothesis confirmation

Path	Coef (β)	STDEV	p-value	t-statistics	Finding
Direct effect					
PISMI -> WPCE	0,051	0,056	0,357	0,92	H1 is not supported
Indirect effect					
PISMI -> IPR -> WPCE	0.270	0.043	0.000	6.303	H2 is supported
PISMI -> CEA -> WPCE	0.047	0.026	0.073	1.793	H3 is not supported
PISMI -> IPR -> CEA -> WPCE	0.156	0.030	0.000	5.255	H4 is supported
GW x PISMI -> IPR	-0,062	0,027	0,022	2,285	H5 is supported
GW x PISMI -> CEA	-0,109	0,035	0,002	3,155	H6 is supported
GW x PISMI -> IPR -> WPCE	-0.025	0.012	0.039	2.065	H7 is supported
GW x PISMI -> CEA -> WPCE	-0.045	0.017	0.008	2.651	H8 is supported
GW x PISMI -> IPR -> CEA -> WPCE	-0.015	0.007	0.039	2.068	H9 is supported
Note: GW = perceived greenwash; PISMI = perceived influence of social media influencers; WPCE = willingness to participate in the circular economy; GW × PISMI = interaction between perceived greenwash and perceived influence of social media influencers; Coef (β) = standardized regression coefficient STDEV = standard deviation					

The simple mediation analysis revealed a significant indirect effect of PISMI on WPCE through IPR (β = 0.067, t = 3.134, p = 0.002, 95% CI = [0.030; 0.113]). Moreover, the effect of PISMI on WPCE remained statistically significant (β = 0.182, t = 3.260, p = 0.001) when IPR was introduced as a mediator. The results indicate a complementary partial mediating role of IPR in the relationship between PISMI and WPCE, supporting H2.

However, the mediation effect of CEA in the relationship between PISMI and WPCE was not significant (β = 0.047, t = 1.793, p = 0.073, 95% CI = [–0.002; 0.101]). Therefore, H3 is rejected.

After analyzing the mediating associations separately, we assessed the relationship between PISMI and WPCE with the serial mediation of IPR and CEA. The results show that PISMI was still positively associated with WPCE with a significant indirect effect through the partial serial mediating path of IPR and CEA (β = 0.156, t = 5.255, p < 0.001, 95% CI = [0.105; 0.223]). This finding supports H4.

To examine H5 and H6 regarding the moderation effects of GW on the relationships between PISMI and IPR, and between PISMI and CEA, we created the interaction term "GW × PISMI" to isolate the effect of GW. The interaction term had significant negative effects on both IPR (β = −0.062; SE = 0.027; p = 0.022; t = 2.285) and CEA (β = −0.109; SE = 0.035; p = 0.002; t = 3.155). According to Kenny (2018) guidelines, small, medium, and large effect sizes for moderation are represented by f^2 values of 0.005, 0.01, and 0.025, respectively. Based on these criteria, the moderation effects in our model can be considered large, suggesting that GW meaningfully alters the strength of these relationships. Specifically, the negative coefficients indicate that as GW increases, the positive impacts of PISMI on both IPR and CEA become weaker. Therefore, H5 and H6 were supported.

The results indicate significant moderated mediation effects. For the mediation path PISMI → IPR → WPCE, the interaction term GW × PISMI showed a significant conditional indirect effect (β = −0.025; p = 0.039; 95% CI = [−0.050; −0.002]), indicating that the strength of the mediation through IPR varied depending on the level of GW.

Similarly, for the mediation path PISMI → CEA → WPCE, the interaction term GW × PISMI also produced a significant conditional indirect effect (β = −0.045; p = 0.008; 95% CI = [−0.083; −0.015]).

Regarding the serial mediation path PISMI → IPR → CEA → WPCE, the results revealed a significant moderated serial-mediation effect of GW × PISMI (β = −0.015; p = 0.039; 95% CI = [−0.029; −0.001]). These findings suggest that GW not only moderates the individual mediation pathways but also the sequential mediation from PISMI to WPCE through IPR and CEA.

Table 6. Conditional indirect effects of PISMI on WPCE.

Mediators	Moderators (GW)	Effects	95% bias-corrected confidence interval	
			LLCI	ULCI
Moderated mediation				
IPR	M-1SD	0.289	0.204	0.365
	M	0.266	0.192	0.333
	M+1SD	0.242	0.174	0.303
CEA	M-1SD	0.092	0.043	0.150
	M	0.047	0.008	0.092
	M+1SD	0.003	-0.043	0.047
Moderated serial-mediation				
IPR & CEA	M-1SD	0.168	0.122	0.227
	M	0.154	0.111	0.209
	M+1SD	0.140	0.100	0.195

Note: IPR = inspiration; CEA = circular economy awareness; GW = perceived greenwash; M = mean; SD = standard deviation; M−1SD = one standard deviation below the mean; M+1SD = one standard deviation above the mean; LLCI = lower level of confidence interval; ULCI = upper level of confidence interval.

In addition, the indirect effect of PISMI on WPCE through the mediation of IPR remained significant across all levels of GW, from low GW (β = 0.289; 95% CI = [0.204; 0.365]) to medium GW (β = 0.266; 95% CI = [0.192; 0.333]) and high GW (β = 0.242; 95% CI = [0.174; 0.303]). As none of these confidence intervals contained 0, the results indicate that the mediating role of IPR is robust and consistent regardless of GW level, although the magnitude of the effect slightly decreases as GW increases. This suggests that higher GW may attenuate, but does not eliminate, the mediation effect of IPR in the relationship between PISMI and WPCE.

By contrast, the indirect effect of PISMI on WPCE through the mediation of CEA decreased with the size of the moderator, from low GW (β = 0.092; 95% CI = [0.043; 0.150]) to medium GW (β = 0.047; 95% CI = [0.008; 0.092]) and high GW (β = 0.003; 95% CI = [−0.043; 0.047]). Since the confidence interval at high GW included 0, the moderated mediation effect was further examined following the guidelines of Preacher, Rucker, and Hayes (2007). These findings indicate that while the mediation of CEA is significant at low and medium GW, it becomes non-significant at high GW, suggesting that higher GW may eventually nullify the mediating role of CEA in the relationship between PISMI and WPCE.

Lastly, the moderation effect of GW on the association between PISMI and WPCE through the serial mediation of IPR and CEA was examined. The serial mediating effect changed from low GW (β = 0.168; 95% CI = [0.122, 0.227]) to medium GW (β = 0.154; 95% CI = [0.111, 0.209]) and high GW (β = 0.140; 95% CI = [0.100, 0.195]). None of these confidence intervals included 0, suggesting that the serial mediation remains statistically significant across all levels of GW, although the magnitude of the effect slightly decreases as GW increases.

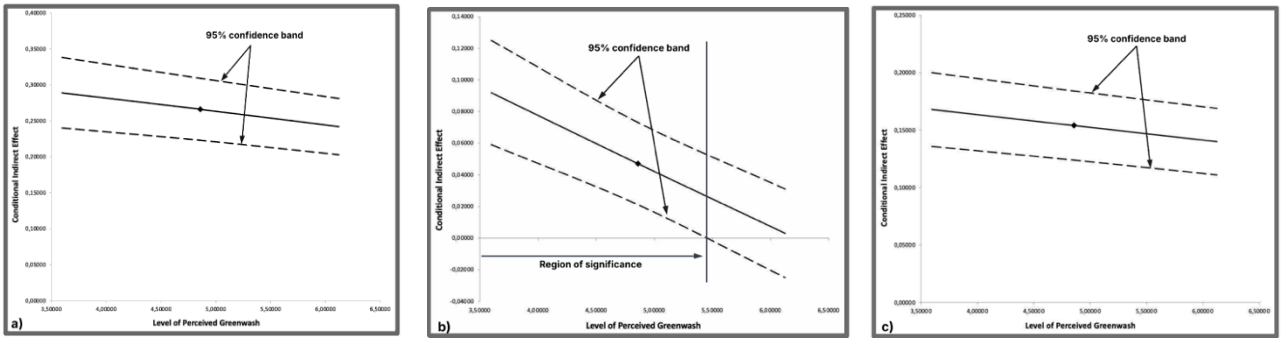


Fig. 2. Conditional indirect effects of Perceived Greenwash on Willingness to participate in Circular Economy through (a) mediation of Inspiration; (b) mediation of Awareness of Circular Economy; (c) serial mediation of Inspiration and Awareness of Circular Economy.

4.2 Discussion and Theoretical implications

Our study offers several fresh insights that broaden the current literature. First, it stands among the earliest investigations into how the perceived influence of SMIs (PISMI) shapes Generation Z's willingness to participate in the circular economy (WPCE). Prior studies have primarily examined the role of SMIs in encouraging sustainable practices within mainstream industries such as fashion, tourism, and food e.g., (Djafarova & Foots, 2022; Lou & Yuan, 2019; Munaro et al., 2024). However, these studies have not examined the indirect pathways through which SMIs foster engagement with circular economy initiatives. By applying the Stimulus Organism Response framework alongside Persuasion and Inspiration theories, our study addresses this gap by clarifying how the perceived influence of SMIs affects Gen Z's WPCE through a moderated serial mediation model. The results provide evidence that SMIs serve as significant predictors of WPCE, with IPR and CEA acting as crucial mediators, thus enhancing the application of SOR theory in sustainability and circular economy research.

Furthermore, the serial mediation analysis revealed partial sequential and partial serial mediation of IPR and CEA. As far as we are aware, this study is the first to test the joint mediating role of IPR and CEA in the link between Gen Z's perceptions of SMIs and WPCE. Accordingly, our research extends prior work by showing that SMIs do not only directly influence pro environmental intentions (Muralidharan & Men, 2015; Wang et al., 2012), but also indirectly shape them through emotional and cognitive mechanisms represented by IPR and CEA. These findings reveal that Gen Z individuals who engage closely with SMIs on social media are more likely to feel inspired, which enhances their awareness of the circular economy and strengthens their willingness to participate in sustainable practices. In addition, stronger engagement with influencer content appears to reinforce both emotional (IPR) and cognitive (CEA) processes, thereby increasing the likelihood that sustainability messages from SMIs are transformed into concrete pro environmental actions.

Second, although earlier studies have identified the negative moderating effect of GW on sustainability related behaviors (Bulut, Nazli, Aydin, & Haque, 2021; Le et al., 2025), little attention has been given to this factor within the context of SMIs and the circular economy. Moreover, the potential moderating role of GW in shaping the indirect influence of SMIs on Gen Z's WPCE has not been investigated. Our study makes a pioneering contribution by examining this boundary condition and demonstrating how GW reduces the effectiveness of SMIs in encouraging pro environmental engagement. The acceptance of two moderated mediation hypotheses confirms that GW weakens the indirect effects of SMIs on WPCE through inspiration and CEA. Likewise, the acceptance of the moderated serial mediation hypothesis indicates that GW also undermines the sequential influence of SMIs via inspiration and CEA. These findings highlight the importance of authenticity in influencer communication, as the presence of GW disrupts both emotional and cognitive mechanisms driving Gen Z's participation in the circular economy.

Consistent with prior studies that emphasize the harmful effects of GW on sustainable behaviors (Bulut et al., 2021; Le et al., 2025), our results reaffirm that GW erodes trust and diminishes behavioral intentions within the influencer marketing domain (T. T. H. Nguyen, Yang, Nguyen, Johnson, & Cao, 2019; Rehman, Kumar, Alghafes, Broccardo, & Patel, 2025; Sun & Shi, 2022).This perspective suggests that when Gen Z perceives GW in influencer content, their willingness to participate in the circular economy declines significantly, since both the credibility of inspiration and the persuasiveness of awareness are compromised. Within the Vietnamese context, where young consumers increasingly rely on influencer communication to shape sustainability related choices, the perception of GW emerges as a critical factor that weakens the impact of SMIs. This reinforces the necessity of examining GW as a moderator in the indirect relationship between SMIs and Gen Z's willingness to participate in circular economy practices.

4.3 Practical implications

This research offers a reference for businesses, policymakers, and non-governmental organizations (NGOs) on how to effectively leverage SMIs to foster Gen Z's willingness to participate in CE (Gonella et al., 2024). The findings underscore

the dual role of inspiration and awareness in shaping consumer engagement, while also highlighting the moderating risk of perceived greenwashing.

For businesses, the results suggest that marketing strategies should prioritize collaborations with influencers whose values authentically align with sustainability. Campaigns should deliver emotionally engaging narratives that not only inspire but also equip consumers with actionable knowledge on CE practices such as reuse, repair, and recycling. To mitigate skepticism, companies must ensure consistency between influencer content and internal operations by adopting verifiable sustainability measures such as transparent supply chains, third-party certifications, and eco-labels. Building an authentic sustainability culture within the organization not only enhances credibility but also strengthens consumer trust, reducing the negative impact of perceived greenwash.

For policymakers and NGOs, the study highlights the necessary of integrating influencers into public communication strategies. Credible influencers can serve as ambassadors in public education campaigns on reuse, repair, and waste reduction, helping normalize circular behaviours and embed CE into everyday consumer discourse. At the same time, strict regulatory frameworks on sustainability claims in both corporate and influencer communications are needed to ensure accuracy and prevent misinformation. Policies can also support CE adoption through incentives such as funding, recognition programs, or tax benefits for businesses and influencers who consistently promote authentic circular practices. Moreover, incorporating CE concepts into educational curricula and linking them with influencer-led outreach can further enhance public awareness and strengthen participation in circular initiatives.

4.4 Limitations and Recommendations

This study primarily focused on university students between 18 and 25 years old in Ho Chi Minh City. This indicates that the representativeness of the findings is relatively limited and may not be generalizable to a broader range of consumer groups in society. Future research could expand the scope and include participants from varied demographic and socioeconomic backgrounds to enhance both the comprehensiveness and practical relevance of the results.

The research is also limited by its general scope of analysis, without focusing on a specific sector such as food and personal care, cosmetics, or fashion. Therefore, future research could extend by testing the model within specific industries, thereby providing more tailored managerial implications for each sector.

Moreover, the research only examined the influence of SMIs on WPCE, without addressing actual CE behaviours. Since businesses are more interested in translating intention into action, future studies should examine actual behaviours to better capture the gap that exists from stated willingness to the adoption of CE practices.

5. CONCLUSION

This study aims to examine the impact of SMIs on consumers' willingness to participate in CE, with a particular concentrate on Generation Z consumers in Vietnam. The results, with the majority of hypotheses supported (7 out of 9), confirmed that the perceived influence of SMIs shows no direct effect on willingness to participate in CE but positively impacts it through indirect mechanisms: first, this effect can be independently shaped by inspiration; additionally, consumer awareness of CE (CEA) may also moderate this mechanism; and finally, through a sequential pathway, whereby followers are first emotionally inspired and then their awareness is enhanced. However, this effect is moderated by perceived greenwash. When followers detect "greenwashing" and doubt the authenticity of green claims, the inspirational and awareness enhancing effects are significantly diminished, thereby reducing the likelihood of participation in CE. To address greenwashing, SMIs should avoid misleading consumers through words, visuals, or graphics in their environmental features, refrain from making vague or un-provable green claims, avoid overstating product green functionality, and ensure that important information is not left out or masked.

This study not only extends the application of the SOR model and reinforces the foundational Persuasion and Inspiration theories but also addresses theoretical gaps in understanding CE-oriented behavior within digital environments, thereby offering novel conceptual insights and actionable guidance for advancing sustainable consumption. It makes a significant contribution to the influencer marketing literature by clarifying the role of perceived influence in shaping inspiration, sustainability communication, and responses to greenwashing, an area of research still in its infancy. Building on these findings, the study delivers practical recommendations for marketers, educators, policymakers, and sustainability-oriented organizations in developing more credible and impactful influencer strategies that foster environmentally responsible behaviors and support the broader transition toward a regenerative CE.

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