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Exploring The Impact Of Social Media Factors On Pro-Environmental Attitude And Sustainable Consumption Intentions: An Empirical Analysis In Hainan, China

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Abstract:

This study explores the influence of social media on fostering pro-environmental attitudes and sustainable consumption intentions among off-island tourists and on-island citizens in Hainan Province, China, which is designated as an international tourism consumption center. Utilizing the Technique for Pro-Environmental Action Modeling (TPAM) and the Social Influence Theoretical Framework, the research delves into the informational, experiential, and relational functions of social media. Through a quantitative survey involving 569 participants from Hainan, the study reveals a positive relationship between these functional dimensions and pro-environmental attitudes. Specifically, social media's informational influence, social emotional experience, and online interpersonal influence are found to positively correlate with pro-environmental attitudes. These attitudes, in turn, mediate the relationship between social media's functional dimensions and sustainable consumption intentions. The research underscores that social media enhances environmental awareness by disseminating information on environmental protection and green consumption, and encourages active participation in environmental actions through emotional experiences and online interactions. However, it is noted that social media use alone does not directly lead to sustainable consumption intentions; rather, it indirectly strengthens these intentions through the promotion of pro-environmental attitudes. The findings offer valuable insights for policymakers, businesses, and social organizations to harness the power of social media in promoting environmental action and sustainable consumption behavior.

Keywords: *Social Media Use, Social Emotional Experience, Online Interpersonal Influence, Pro-Environmental Attitude, Sustainable Consumption Intention.*

1. INTRODUCTION

Many academics have verified the terrible truth that the pace of environmental deterioration has accelerated dramatically over the past few decades(Galaz et al., 2018; Pacheco et al., 2018; Lu et al., 2018). Environmental concerns are increasingly prominent, and consumers are more aware of the harmful impacts of human activities on the natural ecosystem. Because it encourages individuals to start thinking about and altering their consumption patterns to lessen their impact on the environment, this heightened awareness is essential in encouraging environmentally friendly behaviors(Rustam et al., 2020). The growing global call for "a better understanding of the role of consumption and how to achieve more sustainable consumption patterns" reflects the urgent need for sustainable consumption patterns. In China in particular, with rapid economic development and urbanization, consumer demand for environmental protection and sustainable lifestyles is increasing. As an important component of sustainable development, sustainable consumption has incrementally shifted into the spotlight of academic and policymaker investigations.

Multiple research endeavors have verified the escalating importance of social media as a crucial

conduit for spreading information aimed at fostering sustainable consumption(Zafar et al., 2021; Bryła et al., 2022; Nekmahmud et al., 2022). With the rapid development of information and communication technology in China, social media has been recognized as an important factor in changing the way people interact and perceive each other, with great potential to increase environmental concerns and promote sustainable public behavior (Gong et al., 2020; Shen et al., 2020; Grilli & Curtis, 2021). Several studies have pointed out that user reviews, product information, and recommendations on social media platforms can often influence consumers' purchasing decisions, and this influence is particularly significant for younger generations of consumers (Sun & Xing, 2022; Mishra et al., 2023). Positive reviews of sustainable products on social media can increase consumers' willingness to buy green, while negative reviews may decrease their purchase intentions (Luo et al., 2020; Kumar et al, 2023). In addition, by influencing consumers' perceived green values and subjective norms, social media can promote consumers' environmentally friendly purchasing behaviors (Nurtanio et al., 2022). Numerous academic studies have confirmed that social media is an important way of information dissemination and interpersonal interaction, and it plays an important role in shaping and changing people's consumption cognition and action mode (Abidin & Zainol, 2019; Mason et al., 2021; Wahab et al., 2022), and as such it is widely regarded as a highly influential tool in the field of marketing.

Despite the extensive research literature on sustainable consumption leveraging social media technologies, a systematic analysis remains elusive, with existing studies primarily concentrating on specific, localized impacts of social media. For instance, some studies have used social media use as an independent influence variable to explore its effect on sustainable consumption intention behavior with factors such as environmental knowledge, attitude, perceived value, and environmental responsibility (Pop et al., 2020; Zafar et al., 2021; Arora et al., 2023). Additionally, various aspects including social media marketing strategies (Hanaysha et al., 2023) social media user engagement (Alsaad et al., 2023), digital marketing interactions (Armutcu et al., 2024), exposure to social media content (Yanyan et al., 2023), and information-sharing practices (Sun & Xing, 2022) have been individually scrutinized. However, there are not many studies that take social media as a web 2.0 technology as a whole and analyze how the technology affects consumers' purchase intention from its functional perspective. New research perspectives and research variables need to be added to the antecedent factor affecting sustainable consumption in the context of newer web technologies.

This study introduces the Technologies for Pro-Environmental Action Model (TPAM) to elucidating the effective utilization of online technologies, notably social media, in nurturing environmental initiatives and fostering sustainable consumption habits. The TPAM emphasizes the significance of matching the unique functionalities of diverse technologies with various avenues for initiating environmental actions. This alignment is crucial as it significantly increases the probability of achieving desired goals related to environmental behavioral practices, as noted by Gupta and Syed (2022). Furthermore, the model classifies social media into three functional categories: informational, relational, and experiential. This classification is based on the different sources of influence that these platforms can exert in order to stimulate or enhance pro-environmental attitudes among users. By understanding these categories, researchers and practitioners can better strategize social media to improve environmental awareness and action, as supported by the findings of Ballew et al. (2015). This has been confirmed by previous studies, such as Kim et al.'s (2023) study, which found that individuals are more likely to be motivated to take environmentally friendly actions through environmental information and experiences shared by friends and family members, and that users who are frequently exposed to environmental information are more likely to take pro-environmental actions; and that by posting environmentally friendly information and interactions through social media platforms, companies can increase public recognition and support for their environmental efforts (Liu et al., 2020). The TPAM model not only provides a theoretical framework for

understanding the role of online technologies in environmental protection, but also provides practical guidance for developing effective communication and influence strategies (Ballew et al., 2015).

Drawing on previous research, this study will answer how the different functions of social media affect people's pro-environmental attitudes and whether they can contribute to the formation of sustainable consumption intentions with an empirical study set in Hainan, China, according to which the study develops a research model with a series of specific hypotheses of connecting variables, which are validated. The study operationalizes the different functions of social media and explains the mediating role of pro-environmental attitude tawards sustainable consumption intention from the social influence theory. It provides theoretical support and practical experience for using social media platforms to implement pro-environmental behaviors and provide influence strategies to promote sustainable consumption.

2. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

Bryla(2022) points out that the number of studies on the impact of social media marketing and consumer engagement in sustainable consumption has increased significantly in recent years. Research endeavors have revealed that influencer marketing and the development of purposeful, well-crafted, premium, and innovative content represent the primary strategies employed to propel sustainable consumption forward (Bryla, 2022). The influence of social media platforms as a place for information dissemination and social interaction cannot be ignored in shaping consumer behavior. According to Hollebeek et al., (2023), Consumer Brand Engagement is conceptualized in social media environments as brand-related cognitive, affective, and behavioral activities that are positively associated with consumers. This engagement includes not only the direct interaction between consumers and brands, but also the influence of others' behavior on consumer behavior as observed through social media. Word-of-mouth and user-generated content on social media are crucial in enhancing consumers' awareness and willingness to purchase green products, which can stimulate impulse buying desires and thus influence their sustainable purchase decisions (Zafar et al., 2021).

Chwialkowska's (2019) research explores how sustainability influencers (i.e., those who promote environmentally friendly and sustainable lifestyles on social media) drive the adoption of green lifestyles through social media platforms. This study provides a new perspective to understand the adoption process of green lifestyles on social media by combining minority influence models and social learning theory (Chwialkowska, 2019). In the 21st century, digitization and intelligence are transforming business and social structures, with shifts in consumer behavior serving as the primary driver of these changes (Kaplan & Haenlein, 2019; Van et al., 2021). Therefore, social influence theory plays an important role in analyzing digital consumer behavior.

Social influence theory serves as a valuable framework for comprehending the ways in which individuals mold and alter their consumption attitudes in a social context, as highlighted by Hillman and Trier (2013). This theory illuminates how individuals are influenced by the behavior and behavior of their online peers and is therefore of particular importance in the study of social media. This peer influence is critical because it subsequently impacts individuals' own decisions regarding sustainable consumption choices. In today's digital landscape, where social media is pervasive, people's purchasing attitudes are increasingly shaped by their social surroundings. This results in individuals frequently adopting behaviors similar to others, copying their purchasing patterns to gain social acceptance and connection (Kadic-Maglajlic et al., 2019; Nekmahmud et al., 2022). In addition, social influence theory integrates various theories from different disciplines and has a wide range of applications in communication, social psychology, and consumer behavior and so on. This

interdisciplinary approach enables the construction of a comprehensive new model aimed at analyzing the factors that drive—and the cognitive changes that occur in—consumers when purchasing green products. The theory integrates insights from different fields and provides valuable perspectives on sustainable consumption research from various angles of social influence factors.

The social influence theory highlights the dynamic interplay between individuals and the society in which they exist. This theory posits that "is not isolated; rather, they are embedded in a certain social context" (Coleman, 1994) that significantly impact their behaviors and thought processes. As such, various social factors can shape and modify individuals' beliefs, perceptions, values, attitudes, intentions, and actions. These influences can stem from societal norms, cultural expectations, and established social relationships that collectively guide individuals in navigating their lives. Lim et al. (2022) suggest that understanding this intricate relationship is essential for comprehending how societal forces mold individual behaviors and thought patterns in diverse contexts. Coleman (1994) emphasizes the role of social structure, social networks, norms and power relations in shaping individual behaviors and attitudes. This normative social influence takes the form of conformity, identification, and internalization, which allows individuals to learn and internalize these norms in social interactions, thus shaping their behavioral patterns. Zimbardo (1991), on the other hand, explored the power of context and the plasticity of behavior in terms of external environmental and situational factors. When individuals exhibit a certain behavior in a given situation, they may subsequently experience cognitive dissonance, especially if that behavior is inconsistent with their prior attitudes or beliefs. To reduce this dissonance, individuals may adjust their attitudes to be consistent with the behavior (Zimbardo & Leippe, 1991). And when individuals exhibit a certain behavior in a given environment and receive positive feedback, they are more likely to repeat that behavior in the future. This repeated behavior may eventually lead to long-term changes in attitudes. Environmental influence theory suggests that behavior has a significant impact on attitude change. By creating environments that support and encourage specific behaviors, we can promote positive changes in individual attitudes, especially in promoting sustainable consumption and pro-environmental attitude. This approach emphasizes the possibility of guiding behavioral and attitudinal change by altering environmental and situational factors.

The rise of social media has provided new scenarios for the application of social influence theory, changing the traditional model of social interaction and fostering innovations in marketing and business methods. Hillman's research suggests that the mechanisms of social influence in the real world are equally applicable to online social networks (Hillman & Trier, 2013). The TPAM framework classifies social media based on its functions: "informational (sharing knowledge online), relational (building connections in online communities), and experiential (participating in online activities)" (Ballew et al., 2015). These functions serve as effective tools for green marketing (Gupta & Syed, 2022), yet their full potential remains unexplored and validated. This study will fill this gap in the application of social influence theory to the study of sustainable consumption in the context of social media, and contribute to sustainable consumption research by providing a new perspective.

2.1. Pro-environmental Attitude and Sustainable Consumption Intention

Generally speaking, the understanding of pro-environmental attitudes is typically grounded in the ecological impacts of behaviors or the subjective motivations of the actors. Previous studies have shown that pro-environmental attitude indicate an individual's active concern for environmental issues, leading to positive attitudes and tendencies toward protecting the environment or minimizing its negative impacts (Stern, 2000). These behaviors can be routine, such as recycling and energy conservation, or they can be broader social actions such as participating in environmental activities or supporting environmental policies (Tam, 2022) According to the previous studies, people's

internal states, such as gender and age, as well as external perceptions, such as a sense of responsibility and perceived environmental dangers, will affect people's pro-environmental attitudes (Han & Cheng, 2020; Testa et al., 2021). The Theory of Planned Behavior (TPB) posits that attitudes are significant predictors of behavioral intentions. Research has found that individuals with positive environmental attitudes and a greater concern for the environment are more likely to engage in environmental protection actions (Geiger et al., 2021, Iqbal et al., 2023). Therefore, exploring the internal and external influences and the long-term motivations behind pro-environmental behavior (Steg & Vlek, 2021; Bamberg & Schmidt, 2021) and developing targeted interventions can enhance its positive impact on sustainable consumption (Lindh & Mont, 2020).

Sustainable consumption intention refers to the psychological state in which an individual tends to choose options that have less environmental and social impacts and promote efficient resource utilization and ecological balance when purchasing and using products or services (Peattie & Crane, 2005). This intention reflects consumers' consideration of environmental sustainability and social well-being when making consumption decisions. Sustainable consumption represents a crucial aim of the United Nations' long-term objectives for sustainable development, as well as a means to address the adverse environmental and social consequences of consumption (WCED, 1987). Numerous studies have identified significant correlations and forecasts related to intentions and behaviors of sustainable consumption (Ajzen, 1991; Li et al., 2021; Kumar & Nayak, 2023). The primary factors which drive intentions towards sustainable consumption include social environmental elements, socio-demographic characteristics, attitudes and values (both environmental and non-environmental), individual capabilities, factors related to products and producers, as well as contextual elements (Testa et al., 2021; Nekmahmud et al., 2022).

Despite extensive research endeavors focusing on sustainable consumption, which have thoroughly examined various factors influencing sustainable consumption intentions and leveraged these insights to predict and shape consumer behaviors (Alsaad et al., 2023; Kumar & Nayak, 2023), there remains a research deficit in understanding the intricate impacts of resource availability, particularly technological advancements and infrastructural developments, on consumer decision-making processes (Habib & Zhao, 2021). Furthermore, there is a pressing need to delve deeper into the feasibility and methodologies for designing effective policy interventions aimed at fostering sustainable consumption practices (Habib & Zhao, 2021), repeated concept omitted for redundancy reduction). More attention needs to be paid to sustainable consumption behaviors in different social and cultural contexts (Syed et al., 2024), as well as multidimensional approaches that integrate psychological, social, and situational factors to better explain the process of sustainable consumption.

2.2. Social Media Use, Social Emotional Experiences, and Online Interpersonal Influences

In recent times, the advent of novel online commerce modalities, particularly the ascendancy of short-video content and live streaming on social media platforms, has introduced fresh research perspectives for investigating sustainable consumption practices and environmentally conscious behaviors. Currently, there exists a considerable academic focus on the ramifications of social media on individuals' intentions toward sustainable consumption and their pro-environmental actions. This influence manifests in a dual fashion: it may potentially yield beneficial outcomes by augmenting public awareness, whereas it could also lead to detrimental consequences, including the standardization of consumption patterns and potential unsustainability (Simeone & Scarpato, 2020).

A study by Zafar et al. (2021) revealed that social media engagement profoundly influences

sustainable purchasing attitudes and actual behaviors, with trust in social media and perceived environmental validity playing a central role (Arora et al., 2023). Furthermore, for the Chinese market, a study by Naveen Kumar et al. (2025) emphasized that social media and peer influence play a key role in shaping consumers' willingness to make environmentally sustainable purchases. The wide dissemination of user-generated content (UGC) on social media has been shown to be effective in eliciting environmental norms and form environmental formulas that foster greener behavior (Han et al., 2018).

From both generational and cross-cultural viewpoints, Sogari(2017)'s study illuminated the substantial impact of social media on the eco-conscious consumption habits of Generation Z in China. This demographic cohort was observed to prioritize environmental sustainability highly when making purchasing decisions. These findings contribute to our further detailed understanding of the process by which social media platforms shape contemporary consumption patterns, and prompt the younger generation to place greater emphasis on sustainability.

When examining social media usage, the primary emphasis is typically on the level of users' exposure or attention to the media (Aichner et al., 2021). In recent years, media interest in environmental issues has increased significantly, not only providing scientific information on environmental issues such as environmental protection measures, but also helping the public to change their perceptions and attitudes towards this area. Analyzing how teenagers interact with content about climate change on social media shows how online discourse may influence attitudes and actions (Markazi & Magee, 2023). According to Meng et al.(2023), there is substantial study value and implications for the younger generation regarding the use of social media as a platform to encourage pro-environmental beliefs and practices. In the TPAM model, the informational function of social media is emphasized as a key characteristic that enables the generation, distribution, and collection of knowledge and media content. This function allows information to easily reach users and facilitates the widespread dissemination and acquisition of knowledge (Ballew et al., 2015).

By allowing users to be interactive and self-directed, social media's emotional experience function focuses on giving them new online experiences. These elements usually come in a range of formats, including blogs, online forums, interactive games, and web tools that immerse users in a very customized and engaging environment. By designing engaging and interactive experiences, social media can stimulate users' interest in issues such as environmental protection and encourage them to take action. This function has great potential in the field of education and awareness (Dennen et al., 2020) as it is able to convey information in a non-traditional, non-didactic way that is more accessible and memorable to users (Aichner et al., 2021). A key factor in promoting environmental behavior is an individual's connection or interaction with nature. This relationship, which is linked to conservation practices and empathy for the environment, grows with time, particularly from happy childhood environmental experiences (Ballew et al., 2015). Since emotional expression and sharing on social media may affect other users' emotional experiences, which is especially noticeable on social media, this offers a foundation for the use of social media for emotional influence.

The relational functions of social media and social networking services (SNSs), like Facebook, Wechat in China, TikTok, and others, support social connectivity, the development of social identities, and other relationally oriented objectives (such as relationships between individuals and groups). According to Donath and Boyd (2004), these technologies play a pivotal role in fostering intimate relationships, while also enabling the establishment of novel social ties. In particular, they facilitate the "bridging" of new social capital and the "binding" of existing social capital, ultimately strengthening social cohesion and interconnectedness. The expansion of online networks (Fussell

Sisco & McCorkindale, 2013) and the enhancement of online social influence (Newell & Dale, 2019) further contribute to the dissemination of social norms and increased social mobilization. Through these relational functions, social media platforms are able to elevate both individual and collective consciousness and responsiveness concerning environmental matters. Yan et al.(2024) demonstrated the positive impact of social influence on people's purchase intentions from the perspective of informational and normative social influence. Thus, unlike traditional offline face-to-face social influence, online interpersonal influence from people beyond acquaintances such as friends and family has also become increasingly prominent and complex through social media.

2.3. Independent Effect Of Social Media Factors On Sustainable Consumption Intention

An extensive review of existing literature reveals that social media marketing is a vital tool for fostering effective consumer engagement in branding and promoting sustainable consumption (Zafar et al., 2021; Arora et al., 2023). It holds the potential to significantly influence consumers' subjective norms and product awareness, and perceived efficacy, which subsequently shapes their intentions to purchase green products (Nekmahmud et al., 2022; Arora et al., 2023). Within e-commerce environments, particularly where direct face-to-face communication is absent, the emotional expressions of other consumers may significantly impact the feelings and purchasing decisions of individuals (Chuah & Yu, 2021). The emotional reactions of shoppers in the online shopping context can significantly affect their actions (Fan et al., 2018; Sun et al., 2019). Moreover, among consumers who do not engage in direct interaction, the feelings exhibited by others also play a role in shaping moods and purchasing decisions (Chuah & Yu, 2021). A study focused on China conducted by Wang and Wu (2016) indicates that the emotional experiences of consumers are vital in influencing their attitudes and intentions to buy green brands. Factors such as emotional satisfaction and psychological advantages, alongside social norms related to relationship building and sharing on social media, which affect user consumption patterns (Han et al., 2023), can greatly enhance intentions to purchase sustainable products. Based on this, the following hypotheses were proposed.
H1a: Social media use is positively related to sustainable consumption intention。

H1b: Social emotional experience is positively related to sustainable consumption intention

H1c: Online interpersonal influence is positively related to sustainable consumption intention.

2.4. The Mediating Role of Pro-Environmental Attitude in Explaining the Relationships between Social Media Attributes and Sustainable Consumption Intention.

In the context of promoting sustainable consumption, social media is viewed as a crucial factor that plays a pivotal role in publicizing and promoting green products by altering consumers' green purchasing tendencies and behavioral patterns(Burke et al., 2017; Aji, 2019; Shan, 2021). From the perspective of information acquisition, social media has emerged as a mainstream information channel, particularly serving as the primary source of information for individuals to learn about emerging environmental issues (Hynes & Wilson, 2016; Han & Xu, 2020; Shan et al., 2021). These cognitive resources constitute the prerequisite for enhancing environmental awareness and motivating environmental protection attitudes and actions. When individuals possess sufficient understanding of the adverse impacts of global warming and environmental pollution, they are more likely to adopt and implement environmentally friendly attitudes and behaviors (Hynes & Wilson, 2016; Han & Xu, 2020; Shah et al., 2021). Furthermore, attention to environmental issues significantly promotes consumers' attitudes and willingness to engage in eco-friendly purchases, as supported by the study of Canio et al. (2021), once again emphasizing the pivotal role of these cognitive resources in enhancing environmental awareness and motivating environmental protection attitudes and actions.

Numerous studies have confirmed that social media plays a significant role in shaping public

perceptions of environmental issues (Burke et al., 2017; Aji, 2019; Shan, 2021). The use of social media can promote the development of environmentally conscious attitudes and behaviors (Hynes & Wilson, 2016; Han & Xu, 2020). Through social media, individuals can rapidly access and share information about environmental protection and sustainable development, which encompasses not only scientific knowledge but also successful cases and personal experiences. Based on this information, individuals form perceptions of products and brands, thereby influencing their purchasing attitudes. Joseph's research (2019) further confirmed that external factors, including social networks, bridge the gap between attitudes and supportive environmental behaviors. Social Influence Theory suggests that changes in individual behavior are triggered by the actual, implied, or imagined presence and actions of others or social groups. This implies that people's decisions and actions are not solely driven by internal factors but are also significantly influenced by external social dynamics (Jackson, 1987). In the context of social media, social influence factors such as information dissemination, social network interactions, and group norms can promote the development of environmentally conscious behaviors, thereby positively impacting sustainable consumption intentions. Avcı's research (2023) confirms that environmentally conscious attitudes and behaviors positively influence the willingness to purchase sustainable products. Based on this, we propose the hypothesis that social media has an indirect relationship with sustainable consumption intentions through pro-environmental attitude.

H2a: Pro-environmental attitude mediates the relationship between social media use and sustainable consumption intention.

H2b: Pro-environmental attitude mediates the relationship between social emotional experience and sustainable consumption intention.

H2c: Pro-environmental attitude mediates the relationship between online inerpersonal influence and sustainable consumption intention.

Considering the increasing evidence of positive behavioral spillover in environmental contexts, the following hypothesis is formulated:

H2d: Pro-environmental attitude is positively related to sustainable consumption intention.

2.5. Research Framework

Drawing from extensive literature, this study employs the social influence theory and TPAM model to offer a thorough examination of how social media influences individuals' pro-environmental attitudes and sustainable consumption intentions across three distinct aspects, namely, the informational, experiential, and relational functions of social media, which have not been sufficiently focused on in previous studies. This study aims to construct a novel research model to nuance how social media technologies affect sustainable consumption and identify the pioneer factors that influence sustainable consumption intention from the perspective of social media's multifunctionality. This may not only open up new avenues for marketing campaigns for sustainable consumption but may also have significant academic value. For this purpose, a research model depicted in Figure 1 was developed. This model presumes positive associations among all its structural components.

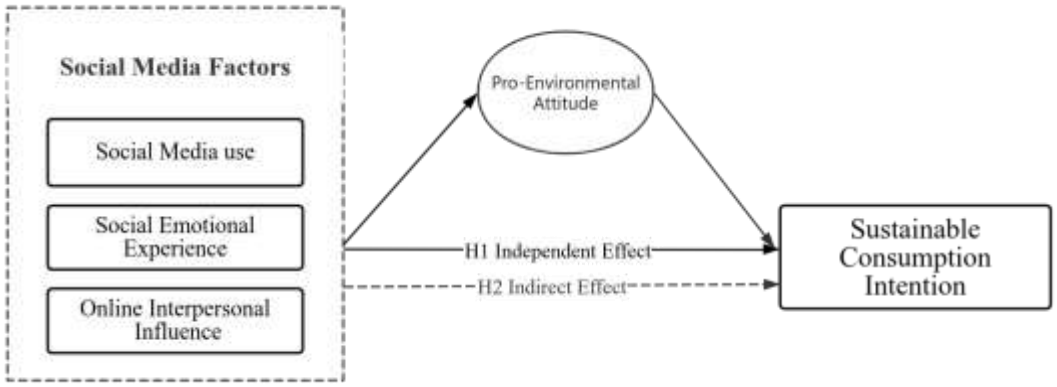

Figure1: The Research Framework

3. RESEARCH METHOD

3.1. Sampling And Data Collection

This study focuses on young social media consumers in Hainan, China, utilizing a structured questionnaire and adopting a quantitative methodology. The subjects for this study were chosen using purposive sampling to focus on a highly relevant group, ensuring the precision of the findings. Given the research questions' emphasis on users' social media experiences, data was gathered through online survey tools. On the one hand, it can protect the privacy and anonymity of the respondents, and on the other hand, online tools can make it easier to reach the target the respondents. A total of 619 questionnaires were collected in this research, with 569 being valid. The gender distribution was 46% males and 54% females, indicating a good demographic representation in the sample. According to Hoelter (1983), the expansion of sample size can enhance the potential of using advanced statistical tools to obtain statistical significance, and then improve the reliability of research conclusions and their popularization. The participants in this study are all young people aged 18 and above and below 35 years, and the proportion of the population with college education or above is 92.4%. Relevant documents in the field of environment have confirmed that people with good education show higher ability in understanding research topics and providing accurate data than those with low education levels (Alwitt & Pitts, 1996). Moreover, prior research has demonstrated that young consumers, notably those within the Y generation (born between 1980 and 2000), possess a notably positive intention towards purchasing eco-friendly products and are more willing to pay a premium price for sustainable consumption (Geng, 2017; Hong et al., 2024).

	Frequency	Percent
Gender		
Male	264	46.4
Female	305	53.6
Total	569	100.0
Age (years)		
18-24 years	111	19.5
25-30 years	266	46.7
31-35 years	192	33.7
Total(respondents)	569	100.0

Table 1 : Respondents' socio-demographic data(N = 569)

3.2. Measures And Construct Operationalization

In this study, previously validated measurement scales were utilized and tailored to fit the unique research context in China. The questionnaire employed a 7-point Likert scale to gauge variables and gathered demographic information. Specifically, for measuring social media usage, the study incorporated and refined insights from Pop et al. (2020) and Nekmahmud et al. (2022), hypothesizing that exposure to environmental information on social media boosts individuals' willingness to engage in pro-environmental attitude and sustainable consumption. Furthermore, the study introduced the notion of social emotional experience, grounded in Lee & Watkins (2016) and De Veirman et al. (2017), to quantify the positive emotions experienced by users while engaging with social media. Given that emotions are regarded as a core driver of human motivation and have a profound effect on memory and thought processes (Kuhl, 1986), this study hypothesized that pleasurable experiences from social media would positively contribute to pro-environmental attitudes and consumers' willingness to consume sustainably. The pro-environmental attitude was measured with six items adapted from Ref. (Milfont & Duckitt, 2010)

The study also measured social influence, i.e., the extent to which consumers interact on social media and are influenced by their online social circles, which was adapted from Fu et al. (2020), and hypothesized that positive social interactions on social media would motivate consumers to generate more sustainable consumption intentions and adopt an environmentally friendly attitude.

Constructs	Measurement variables (questions)
SMU	1. I am constantly exposed to information about environmental changes from social media.
	2. I participate in various discussions about sustainability through social media.
	3. I learn about how other people and places are dealing with environmental issues on social media.
	4. I use social media to learn ways and means of protecting the environment.
	5. I look up information about sustainable products from social media.
SEE	6. I feel happy when I see posts about sustainable products shared by my friends on social media.
	7. I feel sad, angry, or guilty when I see environmental risks on social media.
	8. Seeing my friends' posts about sustainable lifestyles on social media makes me feel motivated to adopt similar practices.
	9. Interacting with friends on social media about sustainable consumption makes me feel emotionally connected to them.
	10. I feel inspired to buy sustainable products when I see influencers promoting them on social media.
OII	11. Information about my friends on social media who are involved in Pro-environmental attitudes influences my decisions.
	12. I often make purchasing decisions based on statements made by influencers I trust.
	13. To make sure I am consuming the right sustainable products or brands, I often watch what other members are buying and using.
	14. What other friends or followers on social media consider important matters are also important to me.
	15. I purchase sustainable products based on recommendations from friends or followers on social media.
PEA	16. Environmental protection is a very important issue for me.
	17. I would like to actively participate in an environmentalist group.
	18. I think I would help to raise funds for environmental protection.

	19.	I often try to persuade others that the environment is important.
	20.	In my daily life I try to find ways to conserve water or power.
	21.	I advocate for placing controls on industry to protect the environment from pollution.
SCI	22.	I plan to purchase sustainable products in the future.
	23.	I am willing to purchase sustainable products.
	24.	I intend to pay more for sustainable products
	25.	I will recommend sustainable products to other people.

Table 2: Measurement instrument (questionnaire)

4. RESULTS

During the data analysis phase, the two-stage structural modeling technique suggested by Anderson and Gerbing in 1988 was adopted, with PLS-SEM serving as the primary analytical method. Initially, confirmatory factor analysis (CFA) was conducted to evaluate the reliability, convergent validity, and discriminant validity of the measurement model. These assessments laid the foundation for hypothesis testing and path analysis, ensuring the quality and applicability of the measurement instrument and the overall accuracy and validity of the study. The PLS-SEM method was employed to delve deeper into the causal relationships among the potential variables. This analytical approach is particularly advantageous for constructing predictive structural models, especially in the context of studying consumer purchase intention.

For the parameter estimation strategy, we adopt the Maximum Likelihood Estimation (MLE), a widely used estimation technique in CFA and SEM, which derives the model parameters based on the probabilistic properties of the observed data, and produces stable and plausible estimates. To validate the hypotheses, bootstrap sampling was implemented, accompanied by the use of bias-corrected and accelerated bootstrap confidence intervals and two-tailed significance tests at a 95% confidence level, thereby ensuring the reliability of the statistical results.

4.1. Measurement Model

The study employed PLS-SEM4 software to build and validate its model, ensuring rigorous analysis. To evaluate the reliability of the dataset, Cronbach's coefficient alpha was utilized. Cronbach's alpha is a statistical measure used to assess the internal consistency or reliability of a set of scale items. According to Hair et al. (2019), an alpha value of 0.7 or higher is considered acceptable. The data presented in Table 3 reveals that the alpha values for all constructs exceeded this criterion, indicating high dataset reliability. Additionally, the composite reliability of the constructs was examined. Composite reliability is a measure that considers both factor loadings and measurement errors in the model. The values of composite reliability in this study ranged from 0.861 to 0.889, all exceeding the critical value of 0.70 (Hair et al., 2019). This further confirms a high degree of inter-procedural reliability and the absence of random errors, ensuring the robustness of the model.

In the examination of factor loading, the Variance Inflation Factors (VIFs) for all items ranged from 1.634 to 2.422, all below the critical value of 5.0. In the context of statistical analysis, multicollinearity refers to a situation where two or more predictor variables in a regression model are highly correlated, which can lead to biased estimates of the regression coefficients, increased standard errors, and a reduced ability to accurately predict the dependent variable. To assess the presence of multicollinearity in a structural model, researchers often calculate the Variance Inflation Factor (VIF). According to Hair et al. (2017), VIF values below the critical threshold of 5 indicate that multicollinearity is not a concern in the model. Therefore, if the VIF values for the predictor variables in a structural model are all below 5, it suggests that the model is free from multicollinearity issues, allowing for more accurate and reliable estimates of the regression coefficients. Therefore, the

constructs in this study demonstrate uniqueness and possess good discriminant validity.

Constructs	Measurement items	Factor loadings	Cronbach's alpha	Composite reliability (rho_a)	Average variance extracted (AVE)	VIF
SMU	SMU1	0.751	0.877	0.882	0.672	1.689
	SMU2	0.792				1.908
	SMU3	0.855				2.408
	SMU4	0.852				2.405
	SMU5	0.842				2.244
OII	OII1	0.822	0.887	0.889	0.688	2.052
	OII2	0.826				2.160
	OII3	0.836				2.200
	OII4	0.819				2.226
	OII5	0.845				2.361
SEE	SEE1	0.816	0.885	0.887	0.686	2.057
	SEE2	0.789				1.870
	SEE3	0.857				2.421
	SEE4	0.853				2.422
	SEE5	0.825				2.102
PEA	PEA1	0.734	0.858	0.860	0.585	1.634
	PEA2	0.751				1.700
	PEA3	0.795				2.082
	PEA4	0.756				1.876
	PEA5	0.797				1.885
	PEA6	0.753				1.712
SCI	SCI1	0.869	0.857	0.861	0.701	2.345
	SCI2	0.801				1.919
	SCI3	0.823				1.895
	SCI4	0.853				2.081

Note: SMU, Social Media Use; SEE, Social Emotional Experience; OII, Online Interpersonal Influence; SCI, Sustainable Consumption Intention; PEA, Pro-environmental Attitude.

Table 3 : The evaluation of the measurement model (reliability, validity, and VIF).

To assess discriminant validity, the Fornell-Larcker criterion was employed, as outlined in Table 4. The criterion involves comparing the square root of the average variance extracted (AVE) for each construct with its inter-construct correlations. In Table 4, all diagonal values represent the square root of the AVE for each construct and are notably the highest in their respective rows and columns. This observation suggests that each construct measures a distinct aspect of the phenomenon being studied and does not overlap significantly with other constructs. Therefore, the measurement model demonstrates good discriminant validity, ensuring that the constructs are uniquely defined and do not confuse the research outcomes.

	OII	PEA	SCI	SEE	SMU
Fornell-Larcker Criterion (FLC)					
OII	0.830				
PEA	0.707	0.765			
SCI	0.782	0.743	0.837		
SEE	0.779	0.745	0.786	0.828	
SMU	0.660	0.699	0.674	0.776	0.820

Table 4: The findings of discriminant validity, Fornell-Lacker

4.2. The Direct path effect of the model

To ascertain the relationship between the independent and dependent variables, hypothesis testing was conducted using PLS. The results, based on the direct effect of the path relationships, are presented in Table 5. According to Hair et al. (2017), a path coefficient is significant if its confidence interval does not include zero. Out of seven research hypotheses, six were supported. Specifically, SEE (social emotional experience), OII (online interpersonal influence), and PEA (pro-environmental attitude) were found to have a significant positive relationship with SCI (sustainable consumption intention), while SMU (social media usage), SEE, and OII were positively correlated with PEA. Thus, hypotheses H1b, H1c, and H2d were supported. Conversely, the relationship between SMU and GPI was insignificant, with a p-value exceeding 0.05, indicating that H1a was not supported. Overall, the path analysis revealed that SEE, OII, and PEA have a significant and positive relationships with SCI, but SMU did not significantly influence SCI, with a p-value of 0.429, further confirming the rejection of H1a.

To initially evaluate the structural model and theoretical framework, two assessments are crucial: the R^2 value assesses the alignment between the regression model and the data, while the Adjusted R^2 value provides a refined measure of model fit by considering the number of predictors and sample size. According to Chin（1998）'s benchmark, R^2 values of 0.67, 0.33, and 0.19 signify strong, moderate, and weak effects, respectively. In this study, the R^2 values for the mediating variable PEA and the dependent variable SCI were 0.622 and 0.718, respectively, indicating explanatory powers of 62% and 71.5%. Additionally, the model's predictive accuracy was evaluated using the blindfolding method, yielding redundancy values of 0.359 for PEA and 0.495 for SCI in cross-validation. The Q^2 value measures the PLS path model's predictive error against a simple mean prediction; a positive Q^2 value indicates the model's predictive relevance. Thus, the results are deemed moderate and acceptable. The study confirms that social media plays a significant role in shaping pro-environmental attitudes and intentions towards sustainable consumption.

Hypothesized paths	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Cofidence interval 2.5%	97.5%	Results
OII -> PEA	0.285	0.284	0.056	5.102	0.000	0.141	0.370	Supported
OII -> SCI	0.348	0.347	0.058	6.027	0.000	0.236	0.457	Supported
PEA -> SCI	0.245	0.247	0.051	4.773	0.000	0.177	0.385	Supported

SEE -> PEA	0.318	0.320	0.060	5.317	0.000	0.240	0.482	Supported
SEE -> SCI	0.303	0.302	0.057	5.290	0.000	0.164	0.389	Supported
SMU -> PEA	0.264	0.263	0.053	5.022	0.000	0.145	0.355	Supported
SMU -> SCI	0.038	0.038	0.048	0.791	0.429	-0.060	0.127	Not Supported
	R^2	R^2 Adjusted	SSO	SSE	Q^2 (=1-SSE /SSO)			
PEA	0.622	0.620	3414.000	2189.497	0.359			
SCI	0.718	0.715	2276.000	1148.802	0.495			

Table 5: The effects of the structural model

4.3. The Indirect Effects Of Social Media factors on sustainable consumption intention through Pro-Environmental Attitude

In this study, the Bootstrap method was used to detect the results of pro-environment attitudes. PLS Bootstrap method generates multiple bootstrap samples by repeated sampling and calculates the mediation effect in each sample. The outcomes presented in Table 6 support the hypotheses H2a, H2b, and H2c formulated in this research. The results show that PEA has a mediating effect on the relationship between OII and SCI, between SEE and SCI, and between SMU and SCI in the context of social media.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Cofidence interval 2.5%	97.5%
OII -> PEA -> SCI	0.070	0.071	0.023	2.971	0.003	0.030	0.122
SEE -> PEA -> SCI	0.078	0.079	0.021	3.694	0.000	0.042	0.124
SMU -> PEA -> SCI	0.065	0.064	0.017	3.740	0.000	0.034	0.101

Table 6: Results of the mediating investigation

5. DISCUSSION

The main purpose of this research is to confirm the positive influence of three core functional aspects of social media—utilization, emotional experience, and online interpersonal influence—on fostering sustainable consumption intentions (SCI), and to explore the mediating role of pro-environmental attitude in this process. The results reveal that each aspect of social media is notably and positively linked to pro-environmental attitude, aligning with the findings of previous studies(Zelenski, J., & Desrochers, 2021; Awang et al., 2021; Meng et al., 2023; Liao, 2024; Tian & Qiao, 2024). This underscores social media's effectiveness in motivating individuals to engage in eco-friendly actions and its positive influence on promoting such attitudes and behaviors.

However, this study found inconsistent results with previous research (Simeone & Scarpato, 2020; Zafar et al., 2021; Arora et al.,2023), regarding the relationship between social media usage and SCI.

Specifically, the direct effect of social media usage on SCI is not significant, but its indirect influence through pro-environmental attitude as a mediating variable is significant, as shown in Table 6. This suggests that the relationship between social media usage and SCI may not be a direct causal chain but is instead realized through the mediation of an intervening variable. This finding further underscores the importance of pro-environmental behavior as a mediator, transforming the informational, experiential, and relational functions of social media into a key factor in promoting SCI. Therefore, the results support the mediating role of pro-environmental attitude in the positive effects of social emotional experience and online interpersonal influence on SCI. Although these variables are expected to be continuously related, the strength of their relationships may vary due to differences in consumer groups or empirical research settings.

6. CONCLUSION

6.1. Theoretical Implications

This study examines the influence of social media functional factors on pro-environmental attitudes and sustainable consumption intentions. Unlike previous research that predominantly employs the Theory of Planned Behavior (TPB), this study adopts the perspective of Social Influence Theory to explore the mechanisms through which different functions of social media impact pro-environmental attitudes and sustainable consumption. This further expands the theoretical application boundary of sustainable consumption research. By focusing on the specific context of social media, the study reveals how social media use, social emotional experiences, and online social influence profoundly affect individuals' sustainable consumption intentions through pro-environmental attitudes. This study emphasizes external environmental factors, particularly the social influence within the social media environment, as a crucial driving force in shaping sustainable consumption intentions.

The research findings demonstrate the robust explanatory and predictive power of Social Influence Theory in the study of sustainable consumption intentions. In the context of social media, users not only receive environmental information and consumption choices from friends, family, and opinion leaders but also engage in discussions and practices related to environmental issues through interactive behaviors such as sharing, liking, and commenting. These interactions strengthen individuals' pro-environmental attitudes and the sense of identity and responsibility towards pro-environmental behaviors. Within this framework, Social Influence Theory manifests in three primary forms: informational influence (changing attitudes by acquiring new knowledge or information), normative influence (conforming to group norms or expectations to align with social identity), and emotional influence (behaving based on positive or negative emotional experiences). These influences work together to prompt individuals to form and strengthen positive intentions towards sustainable consumption on social media platforms.

Furthermore, this study also found that pro-environmental attitudes on social media often exhibit demonstration and diffusion effects. On the one hand, individuals' positive attitudes can inspire imitation and learning by others, creating a chain reaction. On the other hand, these attitudes, through widespread dissemination on the internet, enhance public awareness and acceptance of sustainable lifestyles, thereby further expanding the social basis for sustainable consumption intentions. Social Influence Theory emphasizes the significant impact of the environment on people's behaviors and attitudes. Social media, as a technological tool, has deeply embedded itself into various aspects of interpersonal interaction. In this process, pro-environmental attitudes serve as an important prerequisite and condition for the formation of sustainable consumption intentions.

6.2. Managerial Implications

This research explores the significant role of social media in shaping sustainable consumption intentions, especially with a focus on the key intermediary factor of pro-environmental attitude. The

results indicate that the direct influence of social media usage on sustainable consumption intentions is not substantial, it effectively stimulates users' social emotional experiences and online interpersonal influence, thereby promoting the emergence of pro-environmental attitudes that ultimately translate into sustainable consumption intentions. These results hold profound practical implications for businesses.

Firstly, companies should leverage the interactivity and communicative power of social media to craft creative and engaging content that resonates emotionally with users and fosters their participation. For instance, by sharing environmental stories, success cases, and user feedback, businesses can demonstrate the tangible benefits of sustainable consumption, enhancing users' sense of identification with and belonging to the concept of sustainable consumption. This is because individuals with a strong understanding of environmental issues and their societal and environmental impacts are more likely to exhibit higher levels of pro-environmental attitudes and sustainable consumption intentions (Rasiah et al., 2023).

Secondly, companies should strengthen the guidance and incentives for pro-environmental behaviors, such as setting up environmental challenges, offering trials of sustainable products, and establishing rewards for environmental achievements, to encourage users to convert discussions on social media into tangible actions. This not only helps to raise users' environmental awareness and sense of responsibility but also expands the influence of sustainable consumption through word-of-mouth propagation.

Finally, companies should develop personalized marketing strategies based on the characteristics and needs of different consumer groups. For instance, for younger user groups, it is possible to make greater use of main social media formats such as short videos and live broadcasts for dissemination whereas for middle-aged and older users, in-depth interpretation and guidance can be provided through graphic-text and long-form articles. This will help businesses to more accurately reach and influence their target audience, promoting a shift towards a more sustainable consumption pattern in society.

6.3. Research Limitations and Future Directions

While this research has made advancements in exploring how social media factors affect sustainable consumption intentions, future studies must address and expand upon several existing limitations.

First, the sample selection in this study is limited, focusing mainly on social media users and failing to include non-user groups or consumers with specific age, regional, and cultural backgrounds. This could limit the research findings' representativeness and applicability. Future studies should broaden the sample to encompass diverse consumer groups for a more holistic understanding of social media's influence on sustainable consumption intentions.

Secondly, due to time constraints, this study only conducted cross-sectional data collection, it's important to note that consumers' environmental perceptions and purchase habits may shift over time. To uncover the evolving relationships among these factors, future investigations should incorporate approaches like time series analysis and panel data to investigate how these variables change and interact over extended periods.

Furthermore, this study predominantly employs quantitative techniques, utilizing surveys and data analysis to uncover variable relationships. However, quantitative methods may not capture the full depth of consumers' thoughts and emotions. Future research could integrate qualitative approaches, including in-depth interviews and case studies, to delve deeper into the motivations, obstacles, and factors influencing consumers' environmental behaviors on social media. This will enhance our understanding of how social media fosters sustainable consumption and provide a solid foundation for crafting more effective strategies.

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