

# **Driving Eco-friendly Product Purchases through Social Media: How Does Peer Influence Work?**

## **Abstract**

Social media platforms expose individuals to both peer and marketer influences. While these influences have garnered significant research attention regarding their impact on consumer behaviors, the findings have been a subject of debate. This research examines how peer influence from user-generated content (UGC) differs from marketer influence from marketer-generated content (MGC) in its effect on consumers' eco-friendly product (EFP) purchases and how peer influence takes place. Study 1 uses online field data from an e-commerce company and suggests that peer influence is associated with more sales, whereas there is no empirical evidence to support a similar effect for marketer influence. Utilizing online survey data collected from social media users, Study 2 further reveals that informational and normative peer influences significantly increase consumers' purchase intention via environmental self-efficacy and positive moral emotion. Notably, tie strength with the influencing peer plays a crucial role in moderating the relationship between different peer influences, the mediators, and the mediation paths. Our research advances knowledge of peer influence on EFP consumer behaviors, extends the UGC literature through the lens of peer influence and tie strength, and offers practical implications for social media marketers and policymakers promoting eco-friendly products.

**Keywords:** eco-friendly product, peer influence, marketer influence, user-generated content (UGC), marketer-generated content (MGC), moral emotions, environmental self-efficacy

# **Driving Eco-friendly Product Purchases through Social Media: How Does Peer Influence Work?**

## **1. Introduction**

Social media content has been increasingly used as a marketing tool in areas such as customer relationship management (Wang and Kim, 2017) and influencing sales (Zhang *et al.*, 2021). The literature has discussed two types of social media content: user-generated content (UGC) and marketer-generated content (MGC) (Albuquerque *et al.*, 2012; Chevalier and Mayzlin, 2006). UGC is social media content created and shared by users outside commercial routines (Hautz *et al.*, 2014); thereby it is a source of peer influence on consumer behavior (Zhao *et al.*, 2022). MGC is social media content created by marketers that provides information to potential consumers and exerts marketer influence on them (Noguti, 2022; Song *et al.*, 2019). These two types of social media content also correspond to individual-voluntarily generated “earned social media” and brand-controlled “owned social media” (Colicev *et al.*, 2018).

Companies spend large amounts of budgets on social media marketing. However, their influence on product sales or consumer behaviors are hard to quantify. Some research suggests that MGC influence is less effective in driving purchases due to its less consumer-oriented nature and potential lack of trustworthiness (Goh *et al.*, 2013; Lim *et al.*, 2012). Conversely, other studies have found that UGC can also be distrusted if consumers perceive it as manipulated rather than an authentic representation of users’s opinions (Hautz *et al.*, 2014). In addition to the trustworthiness of information conveyed by UGC or MGC, recent studies further suggest that their effectiveness may vary according to their distinct values and the categories of the products. For example, the value of brand initiative activities on social media may lie more in their functional

aspect rather than emotional appeal (Liadeli et al., 2023). In contrast, word-of-mouth and online social media interactions among peers on earned media are driven by enjoyment from socializing (Lovett and Staelin, 2016). Colicev et al. (2018) found that owned media is more effective for brands with high involvement utilitarian products or higher reputation. Later, Colicev et al. (2019) found that both UGC and FGC are more suitable for durable products and services. To conclude, understanding the mechanism behind social media influence and offering detailed marketing suggestions requires consider the association between product characteristics and the social influence process.

This study focuses on the impacts of peer influence on consumer behaviors involving eco-friendly products (EFPs). EFP refers to products that do not pollute the earth, help conserve resources and support recycling. Purchasing EFPs is a unique context as it is driven by prosocial or social affiliation needs that reflect consumers' conformity to social norms and expectations (Bagozzi and Dholakia, 2002). Due to the importance of information credibility and peer examples in guiding expected behaviors (Bagozzi and Dholakia, 2002), peer influence may be more effective than marketer influence in EFP purchases. Unfortunately, to our best knowledge, there lacks ample evidence to confirm the relationship between peer influence on social media and EFP consumption, though some survey studies have begun to discuss the role of peer interactions in purchasing EFPs (Gao *et al.*, 2022).

Furthermore, this study extends the literature on UGC by exploring the mechanism underlying the relationship between peer influence and EFP purchases. As EFP purchases are driven by prosocial or social affiliation motives (Bagozzi and Dholakia, 2002), the social influence perspective in the EFP context should be prioritized over well-known mechanisms such as enjoyment enhancement in the user generated or

earned media literature (Lovett and Staelin, 2016). Peer influence literature identifies two specific types of influence: informational and normative (Bearden *et al.*, 1989). It remains unclear how these influences affect individual eco-friendly behavior and whether they play differentiated roles in the social media context (Yang *et al.*, 2015).

Incorporating the argument from the dual process framework that individuals process information both experientially and an analytically (Evans, 2008; Liu *et al.*, 2014; Cao et al., 2024), we propose that in the context of EFP purchases, positive moral emotions (Haidt, 2003) serve as the experiential and emotional reactions, while environmental self-efficacy (Huang, 2016) functions as the analytic reaction in the relationship between peer influence and EFP purchases. In addition, as the power of social influence is contingent on the intimacy between peers (Gibbons, 2004), we posit that tie strength, the degree to which an individual maintains interpersonal connections with the peer who publishes UGC (Wang *et al.*, 2012), should further amplify the relationships between peer influence and purchase behaviors via a dual-mediator mechanism.

Therefore, this study aims to gain an in-depth understanding of peer influence on EFP purchases. The objectives of this study are threefold: (1) to investigate the impacts of peer influence on consumers' EFP purchase behavior, particularly whether peer influence has a stronger effect compared to marketer influence; (2) to explore whether and how moral emotions and environmental self-efficacy mediate the impacts of peer influence on consumers' EFP purchases; and (3) to explore whether the impacts of peer influence are contingent on tie strength.

We conducted two successive studies. First, we utilized actual UGC/MGC data from a social media platform and actual sales data from a business to investigate the impacts of peer and marketer influence on consumers' EFP purchases using Bayesian

statistical models. Subsequently, we employed survey data to investigate how, when, and what types of peer influence affect consumers' purchase intentions, incorporating the dual process framework and social influence theory into a new account of the mechanism of UGC. Furthermore, we discuss the boundary effect of tie strength with peers, which also advances the literature on social influence in the social media context by extending the understanding from offline to online social networks. Our results provide novel insights into utilizing peer influence to promote EFP purchases.

## **2. Theories and Research Hypotheses**

### *2.1 UGC and Social influence theory*

The concept of UGC traces its origins back to 2001 (Santos, 2022). Since then, there has been a surge in articles addressing this topic. Even after two decades, scholars have not reached a consensus on what exactly constitutes UGC. Some equate UGC with electronic Word of Mouth (eWOM). For instance, Tirunillai and Tellis (2012) view UGC as “one aspect of a broad phenomenon of inter-consumer communication called word of mouth” (p. 198). They situated UGC within the WOM framework, examining the relationship between product reviews on platforms like Amazon and stock performance. Similarly, Tang et al. (2014) define UGC as media content created by users to share information and opinions with others, measuring it by user comments on platforms like Facebook and YouTube related to brands.

However, other scholars adopt a broader definition of UGC. For instance, Hautz et al. (2014) describe UGC as “a variety of media content created and disseminated by users outside commercial routines”. Specifically, Zhao et al. (2022) define UGC as content created by users, encompassing product ratings, likes, review comments, discussions, and social interactions among peer users. They differentiate this from MGC, which refers to marketing and promotional messages crafted by brand owners.

With the growing influence of UGC, marketers have sought to leverage peer-to-peer content for promotional purposes. Marketers incentivize users to share positive information about their brands within their social circles, a practice known as sponsored UGC (Lu et al., 2014). However, in our research, we exclusively focus on non-sponsored UGC, defining it as media content created and shared by users without formal brand incentives or control, such as ratings, likes, comments, and other social interactions among users.

In this study, we employ the social influence theory to explain the effects of UGC on consumers' EFP purchases. Social influence theory explores how an individual's behavior is affected by their social counterparts (Dholakia et al., 2004; Kuan et al., 2014). Even without direct interpersonal interaction, digital social media contexts such as online communities can still exert significant social influence (Bagozzi and Dholakia, 2002; Dholakia et al., 2004). This influence becomes particularly evident when consumers seek online information for purchase decisions, especially for unfamiliar products. Online information can originate from myriad sources, including brand promotions, evaluations by key opinion leaders, consumers' reviews on online communities, and content disseminated by individual connections such as friends, relatives, and acquaintances on social networks.

In this study, we classify the impact of UGC as peer influence, given that peers inherently interact through UGC, the social media content created and shared by users outside commercial routines (Hautz et al., 2014). Conversely, we categorize MGC influence as marketer influence since MGC comprises social media content created by brand owners or marketers (Noguti, 2022; Song et al., 2019).

## *2.2 Peer/marketer influence and EFP purchase*

Existing studies examining the effects of peer and marketer influence on consumer

purchase behavior or behavioral intention have provided mixed results (see Table 1). For instance, Kumar *et al.* (2016) suggested that MGC has a positive and significant effect on customers' behavior. In contrast, Santiago *et al.* (2022) reported a negative impact on purchase intention. To further clarify the distinct role of UGC or MGC, there is a need to discuss the social influence process with the product context.

The dissemination of EFP products largely depends on social media approaches. Studies have shown that EFP purchases, such as green products, can satisfy consumers' need to affiliate with others or convey shared values and norms between consumers and their peers (Yan *et al.*, 2021). Engagement in UGC helps consumers identify themselves in conformity with a social media community's expectations and regulates their behavior accordingly (Bagozzi and Dholakia, 2002; Dholakia *et al.*, 2004). Influenced by peers' UGC on EFPs, consumers receive support in finding information that aligns with social identity (Arazy *et al.*, 2010). Learning from peers satisfies their need for belonging and provides socially appreciated images. Individuals will engage in EFP purchases to reinforce their social identities and emulate their eco-friendly peers. Additionally, engaging with peers actively increases the credibility and effectiveness of the information shared within social media communities (Bagozzi and Dholakia, 2002), further promoting their EFP purchase behaviors.

[Table\_1\_here]

Unlike peer influence, marketer influence is manipulated by brand owners or marketers. For example, marketers often exaggerate the benefits of their products and downplay their shortcomings (Goh *et al.*, 2013), which reduces the persuasive power of MGC and raises consumers' doubts and sense of being controlled. This leads to weak overlaps in prosocial values between marketers and consumers in MGC, which results in marketers failing to facilitate norm internalization via social influence. Consequently,

marketer influence on EFP purchases is not as strong as that of peer influence. Literature also supports that MGC or owned media operate through activating memory (Lovett & Staelin, 2016), increasing brand awareness and enhancing customer satisfaction rather than promoting purchase intention (Colicev et al., 2018). Hence, we propose the following:

***H1: Peer influence has a stronger positive effect on EFP purchases compared to marketer influence.***

### *2.3 Dual mediator mechanism underlying peer influence and EFP purchase intention*

Social influence theory stresses the important role of social counterparts, particularly peers, in the social media context. Peer influence in social media communities can further be divided into informational and normative influences (Bearden *et al.*, 1989). Consumers tend to “accept information from others as evidence about reality” (informational influence) and “conformify to the expectations of others” (normative influence) (Bearden *et al.*, 1989, p.474). When consumers are affected by informational influence, they acquire knowledge about a specific product or brand by asking for information from their peers or observing their peers’ related attitudes and behaviors (Yang *et al.*, 2015). When influenced by normative influence, consumers exhibit similar behaviors to their peers in product or brand choices to gain social recognition or acceptance (Kuan *et al.*, 2014).

When interacting with peers in the social media context, an individual consumer experiences complex information processing stages, including raising awareness, developing interest, and making final decisions (De Bruyn and Lilien, 2008). Dual processing accounts support such viewpoints on information processing, demonstrating that human process information using two distinct but interactive approaches:

experiential and analytic (Evans, 2008; Cao et al., 2024). In the experiential model, individuals have automatic emotional reactions to the input information (Evans, 2010). Conversely, in the analytic mode, individuals encode information in a deliberate and systematic manner.

In this paper, we contend that when absorbing peer influence on EFP, individuals not only generate intuitive emotional reactions (i.e., positive moral emotions) but also cognitively analyze their environmental self-efficacy in making EFP purchase decisions. By applying dual process framework, we further clarify the mechanism underlying peer influence of EFPs in the social media context.

### 2.3.1 The mediating role of positive moral emotions

Moral emotions are reactions that are “linked to the interests or welfare either of society as a whole or at least of persons other than the judge or agent” (Haidt, 2003, p.853). People may evoke positive moral emotions when they respond to their peers’ good and ethical behaviors, such as gratitude, awe, and elevation. When receiving information and knowledge about identifying EFPs and leveraging them to address environmental pollution, people should feel grateful for this knowledge and touched by their peers’ kindness, charity, and moral virtue regarding their eco-friendly efforts, evoking feeling of awe and elevation.

When people comply with peers’ eco-friendly norms and values (i.e., affected by normative influence), they generate feelings of belongingness and react with gratitude upon becoming part of the social group. Moreover, normative influence leads people to identify with eco-friendly values, thereby triggering a greater sense of meaningfulness and reverence for eco-friendly activities. This allows them to experience awe and elevation in relation to eco-friendly behaviors.

Affects or emotions that raise an individual’s interest and excitement are essential

and immediate reactions to the social influence process (Bagozzi *et al.*, 2016; Seegebarth *et al.*, 2019; Hareli and Rafaeli, 2008). Positive emotions indicate that one is in a safe situation, and under such circumstances, people tend to embrace new things and exhibit more prosocial behaviors (De Dreu *et al.*, 2008). Consequently, positive moral emotions make consumers perceive eco-friendly behaviors as enjoyable and meaningful, increasing their willing to consume EFPs.

Moreover, people experience positive moral emotions when they find their virtuous peers' actions inspiring, leading to admiration and a desire to follow their peers. These emotional reactions engage individuals in similar behaviors to their eco-friendly peers, resulting in greater EFP purchase intentions. We propose the following:

***H2a:*** *Positive moral emotions mediate the relationship between informational influence and EFP purchase intention.*

***H2b:*** *Positive moral emotions mediate the relationship between normative influence and EFP purchase intention.*

### 2.3.2 The mediating role of environmental self-efficacy

The tendency of people to engage in behavior to achieve an expected performance depends on their beliefs regarding whether they can produce the performance, known as self-efficacy (Bandura, 2001). In our study, environmental self-efficacy is one's belief in their ability to take actions to mitigate environmental issues (Huang, 2016). Self-efficacy is a critical cognitive evaluation shaped by interactions between the individual and social context (Hu and Liden, 2013). It can be derived not only from personal mastery experience but also from external sources of information such as vicarious experience and social persuasion.

People acquire knowledge about mitigating environmental pollution from informational influence. Thus they have confidence and belief in their ability to reduce

environmental issues. Similarly, normative influence stimulates individuals' desire to affiliate with their environment-friendly peers, who serve as role models. Learning from these peers reinforce their belief in their ability to mitigate environmental problems in the same way.

Based on the self-evaluation process, people's belief in their abilities regulates their behaviors toward desired performance (Tierney and Farmer, 2002). Individuals with higher levels of environmental self-efficacy believe that their effort in protecting the environment can make a difference. Consequently, they hold greater confidence in EFP and are more likely to purchase them. Thus, the following hypotheses are proposed:

***H3a:*** *Environmental self-efficacy mediates the positive relationship between informational influence and EFP purchase intention.*

***H3b:*** *Environmental self-efficacy mediates the positive relationship between normative influence and EFP purchase intention.*

#### *2.4 The moderating role of tie strength*

The effectiveness of informational influence depends on whether individual consumers perceive their peers as trustworthy, while the power of normative influence lies in consumers' desire for social acceptance by peers. An important condition emerges here: tie strength with the influencing peers (De Bruyn and Lilien, 2008). Tie strength is the degree to which an individual is willing to maintain interpersonal connections with peers through social media (Wang *et al.*, 2012). It shows the closeness, intimacy, and reciprocal relations between two parts (De Bruyn and Lilien, 2008; Hu *et al.*, 2020). Strong ties, defined as close relationships formed within a personal network, contribute to social support with trust and obligation (Chu *et al.*, 2020; Ye *et al.*, 2018; Yakubovich, 2005). In contrast, weak ties, defined as less close personal social relationships, bring individuals more diverse information and facilitate information flows (Goldenberg *et*

*al.*, 2001; Granovetter, 1973).

Social media connects consumers with peers of various tie strengths. Strong-tie peers are more likely to share genius experience and information with individuals due to the greater intimacy and similarity they share (Chung and Tsai, 2009). In contrast, weak-tie peers maintain a certain distance from individuals and are less reluctant to share negative or controversial messages (Chen and Berger, 2013; Dubois *et al.*, 2016). Thus, we infer that strong-tie peers provide a strong modeling effect and persuasions through informational influence, reinforcing individuals' belief in their ability to reduce environmental issues similar to their peers. However, informational influence from weak-tie peers is less useful, as these peers hesitate to share detailed experiences with less close peers. Consequently, their informational influence is less effective in helping individuals establish knowledge about EFP, and their modeling effect is less relevant to individuals. Thus, we posit the following:

***H4a: Informational influence from strong-tie peers has a stronger positive effect on environmental self-efficacy than that from weak-tie peers.***

Individuals tend to build long-term and more reciprocal relationships with strong-tie peers, wishing to maintain interactions both online and offline. In contrast, relationships with weak-tie peers often involve fewer interpersonal obligations or may be driven by external rewards (Chung and Tsai, 2009). Consequently, individuals are more likely to identify with, empathize with, and be influenced by strong-tie peers. Strong tie connections arouse one's ought self (Chung and Tsai, 2009), which is realized through fulfilling duties and obligations.

When individuals comply with strong-tie peers' eco-friendly suggestions, norms and values (i.e., normative influence), their feelings of belongingness should be more easily aroused. This leads to strong reactions to peers' virtue and kindness, resulting in

high levels of gratitude, awe and elevation emotions (Yu et al., 2018). However, weak-tie peers are distant from individuals' ought selves, so their normative influence is less influential in arousing feelings of admiration or gratitude. Therefore, the following moderation effect is proposed:

***H4b:*** *Normative influence from strong-tie peers has a stronger positive effect on positive moral emotions than that from weak-tie peers.*

### *2.5 The moderated mediation effect*

Furthermore, we argue the corresponding moderated mediation effects. Individual consumers find their strong-tie peers' information trustful and valuable, so the informational influence from strong-tie peers exerts a strong effect on their environmental self-efficacy. Consequently, these consumers are more likely to engage in EFP purchases to contribute to environmental protection. Although informational influence from weak-tie peers can satisfy individuals' needs for more information on EFP, such influence is perceived as less reliable and lacking reference value. Therefore, it cannot fully support their mastery of EFP knowledge or their belief in improving the environment like their peers, which in turn, hardly encourages their EFP purchase intentions. Thus, we propose the following:

***H5a:*** *The mediating effect of environmental self-efficacy on the relationship between informational influence and EFP purchase intentions is more pronounced in strong-tie situations than in weak-tie situations.*

As individual consumers wish to maintain close relations with strong-tie peers both online and offline, they more likely to appreciate their peers' kindness and attention to EFP. Influenced by their close peers, individuals will recognize the pro-social benefit of EFP products, evoke positive moral emotions toward their eco-friendly peers, and ultimately purchase EFP products to emulate their models. However,

individual consumers often fail to empathise with their weak-tie peers, making them less psychologically involved in normative influence from weak-tie peers. Consequently, normative influence from weak-tie peers is less effective in arousing emotional reactions and promoting their EFP purchase intentions. Thus, we posit the following:

***H5b:*** *The mediating effect of positive moral emotions on the relationship between normative influence and EFP purchase intentions is more pronounced in strong-tie situations than in weak-tie situations.*

Figure 1 presents the proposed research model and research hypotheses.

[Figure\_1\_here]

### 3. Study 1

#### 3.1 Research setting and data

The first study utilizes field evidence to examine the impact of peer and marketer influence on consumers' EFP purchases and to compare the differences between the two impacts. We used social media data from *Xiaohongshu*<sup>1</sup>, one of China's most popular social networking platforms. In particular, data were collected from a company selling plastic substitute products, such as biodegradable bags and food boxes. Marketers can create official brand pages and post messages (i.e., MGC) on *Xiaohongshu*, where users can respond by liking, commenting on posts, or sharing posts with others on the brand page. Users can also post original messages about the firm's products on their personal page (i.e., UGC) (see online Appendix A).

The firm provided us with data on social media activity from February 4, 2020, to

---

<sup>1</sup> <https://www.xiaohongshu.com/en/>. Xiaohongshu was founded in Shanghai, China as a user-generated content community focusing on overseas shopping experiences. It launched its e-commerce business in 2014.

April 8, 2021, along with its online sales data for the same period. These datasets were collected from independent sources. The social media activity data encompassed communication content about the firm's products and consumers' engagement outcomes (e.g., the number of posts, the volume of likes, bookmarks, comments, and shares on posts) on *Xiaohongshu*. The online sales data were collected through the firm's point-of-sale (POS) database, which contains specific sales records for each online order.

Before establishing statistical models, we matched the social media activity data and sales data collected from the two independent sources. Since the brand does not post MGC on *Xiaohongshu* every day and the influence of social media content on sales would thus occur in a time-lagged manner, we aggregated the number of posts, MGC, UGC, and sales by week (i.e., from every Sunday to Saturday). Notably, we excluded data from the first and last weeks because the data for these two weeks were incomplete. Ultimately, we completed data collection within 60 weeks after the matching process.

We operationalized marketer influence as the number of messages posted by marketers and included the number of likes, bookmarks, comments, and shares for each MGC post separately. Peer influence was operationalized in the same way, using the number of likes, bookmarks, comments, and shares to measure user engagement with UGC. This approach aligns with the literature on social media advertisements, where user engagement metrics are commonly used to gauge social influence intensity (Wallace et al., 2014). We operationalized EFP purchase as the total volume of EFP sales by week. Although the firm sells a wide range of EFPs, data constraints prevented us from precisely identifying which product corresponded to which MGC and UGC. Therefore, we used the aggregated weekly sales volume as our measure.

Figure 2 presents the number of posts, likes, bookmarks, comments, and shares of

MGC and UGC over 60 weeks. This figure indicates that the MGC on the firm's products is produced later than the UGC (approximately half a year later). Figure 3 presents a line graph showing the weekly change in the total volume of EFP purchases. EFP purchases increased significantly during mid-June, mid-November, and mid-December, which correspond with China's most popular nationwide online shopping extravaganza.<sup>2</sup>

[Figure\_2\_here]

[Figure\_3\_here]

Furthermore, considering the diversity in topics and specific content of each post, this study utilized a BERT-based deep learning model to categorize the topics and posting purposes of MGC and UGC posts. After calculating the proportions of each topic (Product introduction, Usage-experience sharing, Recommendations, Campaign announcements, and Others), we found that the differences between MGC and UGC in topics were minimal (see Figure 4). Similarly, we aggregated the proportions of each topic by week and included them as control variables in the model.

[Figure\_4\_here]

### *3.2 Models and results*

In Study 1, we proposed two Bayesian statistical models to investigate the various effects of peer influence and marketer influence on EFP purchases. Since MGC and UGC are not generated simultaneously, the associations between peer/marketer influence and EFP purchases could vary between periods. Furthermore, the effects of peer/marketer influence on EFP purchases may not be constant but could change dynamically over time. Thus, we proposed a state-space model in Model 1 to estimate

---

<sup>2</sup> These shopping extravaganzas include the "618" Shopping Festival on June 18th, "Double 11" Shopping Festival on November 11st, and "Double 12" Shopping Festival on December 12th. The three shopping extravaganzas have become national shopping festivals in China, which are similar to Black Friday in the United States.

the dynamic associations between peer/marketer influence and EFP purchases. In addition, we used Markov chain Monte Carlo (MCMC) methods to evaluate all models and take recursive samplings from the full conditional distributions of relevant model parameters. The posterior distributions were standard conjugate distributions in all models, and the prior distribution for all parameters was assumed to be noninformative. We created four chains of draws from the fully conditional posterior distributions, where each chain contained 80,000 iterations with 20,000 burn-in threats and thinned all target threats by one in every two threats.

First, following Yang et al.'s (2020) method of dealing with social media data, Model 1 is specified as follows:

$$\begin{aligned}\mu_t &= \beta_0 + x'_{1t}\beta_1 + x'_{2t}\beta_2 + \beta_3x_{3t} + \beta_4x_{4t} + \gamma_1P_{1t} + \gamma_2P_{2t} + \gamma_3P_{3t} + e_t, \\ y_t &\sim N(\mu_t, \sigma_y),\end{aligned}\tag{1}$$

where  $y_t$  is the logarithm of sales volume in period  $t$ , which is assumed to be normally distributed with mean  $\mu_t$  and standard deviation  $\sigma_y$  (see Figure 5).  $X_1$  and  $x_2$  are two ( $4 \times 1$ ) vectors containing the marketer influence and peer influence (log of likes, bookmarks, comments, and shares on MGC/UGC), respectively. Parameters  $\beta_1$  and  $\beta_2$  represent the elasticities (i.e., impacts) of marketer influence and peer influence on EFP purchase, respectively. Variables  $x_3$  and  $x_4$  are the logarithm of MGC posts and UGC posts in period  $t$ , which were added into the model to avoid estimator bias and thus obtain an accurate assessment of the sales effects of marketer influence and peer influence. All logarithmic transformations included a smoothed count of 1 to avoid taking the logarithm of zero. Dummy variables  $P_1$ ,  $P_2$ , and  $P_3$  represent whether the UGC or MGC was posted during the three shopping extravaganza periods.  $e$  denotes the heterogeneity by month. Since such differences cannot be exactly measured, we represented them in our model using

normally distributed random variables with a mean of zero. Additionally, according to Kumar et al. (2016), it is not necessary to estimate the time-lagged effect between peer/marketer influence and EFP purchases.

[Figure\_5\_here]

We estimated the parameters in Model 1 using the linear mixed regression model. To avoid differences in peer influence and marketer influence due to different follower counts, we first used a Bayesian Independent Samples t-test to examine the engagement metrics for each post on average. The results showed that while the mean engagements per UGC were larger than those per MGC, the Bayes factors were around 1.1, indicating that there was no statistical evidence to suggest differences between the two (see Appendix B for detailed results). The aim of Model 1 was to identify whether marketer and peer influences have significant effects on EFP purchases. The full model is not well suited for this purpose because when including all four peer/marketer influence variables, collinearity ( $rs > 0.85$ ) among them can cause some of their coefficients to be insignificant even if the stand-alone effect is significant. The most straightforward way to show the effects of peer/marketer influence in our situation was to estimate EFP purchase models one variable at a time while including the control variables in each model.

Table 2 presents the estimation results of these models (Models 1a–1d). The Rhat of each parameter in each model was less than 1.05, which implies the convergence of the sampling results.<sup>3</sup> The univariate test results indicate that all four indicators of peer influence—likes, bookmarks, comments, and shares on UGC—have significant effects,

---

<sup>3</sup> More than 80% of the products sold by the firm were priced between \$15 and \$130, with minimal deviation ( $SD = 44.27$ ; see Figure 5). Although there were no price variables in the models, we included the price of each item in the error terms and determined that MGC influence and UGC influence were not significantly correlated with the error terms (see Table 2). Thus, not including prices in the models did not cause estimation bias of the core independent variables in our study.

while the effects of marketer influences are insignificant. As expected, the three shopping extravaganzas had significant effects on sales; however, the posts of both MGC and UGC did not have a significant effect. By comparing the MCMC samples, we found that the elasticities of peer influence on EFP purchase were greater than those of marketer influence in more than 95% of cases (Appendix C). Thus, our estimates show that peer influence is more significantly associated with EFP purchases than marketer influence. Figure 6 (above) is drawn as an example to provide prediction plots for the likes and EFP purchase model (i.e., Model 1a), where the dots represent the actual sales, the line shows the estimation, and the shadow portion demonstrates the error range. This figure indicates that the predictions from the linear mixed model fit the data well. Overall, these results support H1.

To strengthen the robustness of the differences between peer and marketer influences, we also examined a model that included different topic proportions of MGC and UGC for each period as control variables. The results indicated that while certain topics significantly impacted sales, the parameter estimates for peer and marketer influences remained consistent in both direction and significance (see Table D1 in Appendix D). In addition, since omitted variables, such as the content of UGC/MGC in our case, that simultaneously influence the dependent variable (sales) and the independent variables (marketer and peer influence), may lead to biased and inconsistent parameter estimates (i.e., endogeneity), we also used the latent instrumental variable (LIV) approach to examine this potential issue. The results indicated that the correlations between sales and marketer/peer influence errors were insignificant, meaning that there is no evidence of endogeneity of these variables in our data (see Appendix D-Table D2 for detailed results).

[Table\_2\_here]

[Figure\_6\_here]

Model 1 has several limitations. First, the linear mixed model prevents the effect of the independent variable on the dependent variable (i.e., the slope) from being dynamic over time. However, the effects of social media may change over time (Moe and Trusov, 2011; Wang and Kim, 2017). Under this circumstance, the impacts of marketer influence and peer influence on EFP purchases might not be linear but dynamic, which would change over time. Additionally, we do not consider whether sales in period  $t$  were affected by the sales in period  $t-1$  in Model 1. Moreover, we noticed that MGC posts were generated earlier than UGC posts in our dataset. Therefore, to further improve the robustness of our estimation results, we proceeded to Model 2, in which we introduced a state-space model and considered data generation processes with probabilistic distributions in the model. Time series data can be flexibly described by a state-space model, which allows for the assumption of invisible states. The complete Model 2 is specified as follows:

$$\begin{aligned}
\tilde{\mu}_t &= \beta_{0t} + x'_{1t}\beta_{1t} + x'_{2t}\beta_{2t} + \beta_{3t}x_{3t} + \beta_{4t}x_{4t} + \gamma_1P_{1t} + \gamma_2P_{2t} + \gamma_3P_{3t} + e_t, \\
\beta_{0t} &\sim N(\beta_{0t-1}, \sigma_0), \\
\beta_{1t} &\sim N(\beta_{1t-1}, \sigma_1), \\
\beta_{2t} &\sim N(\beta_{2t-1}, \sigma_2), \\
\beta_{3t} &\sim N(\beta_{3t-1}, \sigma_{b3}), \\
\beta_{4t} &\sim N(\beta_{4t-1}, \sigma_{b4}), \\
y_t &\sim N(\tilde{\mu}_t, \tilde{\sigma}_y),
\end{aligned} \tag{2}$$

where the variables were measured the same as previously defined; however, the parameters of the intercept and core independent variables (i.e.,  $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ ) were time-dependent in this model.

The Rhat in Model 2 was less than 1.03, which suggests that the models are convincing. Figure 6 (bottom) demonstrates the prediction results of the likes-sales-relationship based on the state-space model. Compared to the linear mixed model, the predictions from the state-space model fit the data better.

In Model 2, given that the estimation of the effect of peer/marketer influence on EFP purchase (i.e., elasticity) is dynamic, we plotted line graphs of the estimated results. Figure 7 presents the parameter estimates of the elasticity of peer/marketer influence on the EFP purchase varying over time, where the solid line indicates the median of the parameter estimates and the shadow portion demonstrates the 95% credible interval of the estimates. The median estimates of the relationships between marketer influence and EFP purchases were approximately 0.02. In contrast, the median estimator of the relationships between peer influence and EFP purchases was greater than 0.1. More importantly, nearly all of the 95% CI of the marketer influence covered 0, while that of the peer influence was above 0, indicating that peer influence was more salient than marketer influence in affecting EFP purchases.<sup>4</sup> Consequently, the estimation results of the state-space model further demonstrate that peer influence affects sales, while the effect of marketer influence is nearly insignificant, further supporting H1.

[Figure\_7\_here]

In Study 1, we utilized real sales data from a company to demonstrate that peer influence positively impacts EFP purchases, whereas marketer influence does not. However, due to limitations in the available data, we were unable to further delineate the distinct roles of various peer influences on EFP purchases and the underlying mechanisms. Additionally, the potential moderating effect of tie strength on purchase

---

<sup>4</sup> The large credible intervals for the earlier weeks were inferred to be caused by the absence of MGC and UGC posts (especially MGC).

effects of peer influence remains unclear. Therefore, we will address these issues through experimental investigations (hereafter Study 2) in subsequent sections.

## **4. Study 2**

### *4.1 Procedures and samples*

The second study further analyzes how, when, and what type of peer influences affect consumers' purchase intentions through an in-depth survey. We collected data of Study 2 with the help of an online survey platform, *Credamo*, which has a database of more than 3,000,000 registered respondents in China. *Credamo* follows strict sample collection procedures to guarantee valid responses. *Credamo* also employs quality control approaches such as assigning subject credit score and eliminating ineligible subjects.

Before our formal survey, we included a filter question: "Looking back over the last 6 months, have you ever received information about eco-friendly products on any social media platform?" We also provided definitions and examples of eco-friendly products. Respondents who answered "Yes" were included in our formal test. After respondents completed the questionnaires, we received the database from *Credamo*, which included additional information such as the time each respondent took to answer the survey. We filtered out unqualified responses from those who completed the survey within less than one-third of the average response time. In total, we distributed 382 questionnaires and obtained 273 valid ones, with an effective response rate of 71%. The survey asked the respondents to recall a recent interaction with one peer on a social media platform that involved discussing EFPs and to answer questions based on that situation.

The sample was composed of respondents from different regions of China, representing various age groups and income levels. Of the total participants, 44.69%

were male. The age distribution was as follows: 2.56% were 18–20 years old, 76.19% were 21–30, 20.15% were 31–40, and 1.10% were older than 40. In term of education, 1.83% were high school graduates or below, 4.76% had an associate’s degree, 79.85% had a bachelor’s degree, and 13.56% had a postgraduate degree.

#### 4.2 Measures

The measures of constructs in our survey were adopted from the relevant literature. We invited two bilingual individuals to conduct the back-translation process for the scales originally written in English. We further asked three professors in this field to carefully revise the translated scales to fit our EFP purchase context. All the details of the items are presented in appendix E. A 7-point Likert-type scale ranging from 1 “strongly disagree” to 7 “strongly agree” was used for all measures.

***Normative influence.*** The eight-item scale of *normative influence* was adopted from Bearden (1989). An example item is: “I rarely purchase EFPs until I am sure [peer name] approves of them” (Cronbach’s  $\alpha = 0.919$ , composite reliability [CR] = 0.924, average variance extracted [AVE] = 0.609).

***Informational influence.*** The four-item scale of *informational influence* was adopted from Bearden (1989). An example item is: “To make sure I buy the right EFPs, I often observe what [peer name] is buying and using.” We averaged the four item scores to create a total scale score (Cronbach’s  $\alpha = 0.876$ , CR = 0.844, AVE = 0.663).

***Positive Moral Emotions.*** We used the six-item scale of positive moral emotions developed by Xie *et al.* (2019) to evaluate participants’ emotions when interacting with peers on social media. Positive moral emotions contain three dimensions: gratitude (grateful/thankful), elevation (touched/moved), and awe (amazement/feelings of wonder). We averaged the six item scores to create a total scale score (Cronbach’s  $\alpha = 0.892$ , CR = 0.894, AVE = 0.584).

**Environmental Self-Efficacy (self-efficacy).** We used the 3-item scale of environmental self-efficacy developed by Huang (2016). The following is an example item: “I believe that I have the ability to take action to prevent environmental pollution” (Cronbach’s  $\alpha = 0.753$ , CR = 0.766, AVE = 0.524).

**Tie strength with peers.** We used the 5-item scale of tie strength with peers developed by De Bruyn and Lilien (2008) and Xia (2012). An example item is “Please rate your closeness to this peer” (Cronbach’s  $\alpha = 0.965$ , CR = 0.965, AVE = 0.846).

**EFP Purchase Intention (purchase intentions).** We used the three-item purchase intention scale developed by Wei *et al.* (2021). The following is an example item: “I will make an effort to purchase EFPs” (Cronbach’s  $\alpha = 0.891$ , CR = 0.892, AVE = 0.733).

**Controls.** We controlled for age, gender, education level, and income level in the analysis. We also asked respondents about which social media platform they engaged in, and ANOVA results show that distinct social media platforms do not show difference in purchase intention ( $F(7,265) = 1.360$ ,  $p = 0.223$ ).

#### 4.3 Preliminary analysis

The descriptive statistics, correlations, and scale reliabilities are presented in Table 3. We conducted confirmatory factor analysis in Jamovi to assess the discriminant validity of the measures. The results reported in Appendix F indicate that the baseline model fits the data better than any of the alternative models ( $\chi^2 = 818$ ,  $df = 362$ ,  $p < 0.001$ , RMSEA = 0.068, CFI = 0.933, TLI = 0.925, SRMR = 0.058). Overall, the discriminant validity of the constructs was supported.

The exploratory Harman’s single-factor test shows that the unrotated first factor accounts for less than 50% of the variance (Hair *et al.*, 1998). In addition, the confirmatory Harman’s single-factor test shows that the one-factor model fits the data

poorly ( $\chi^2 = 2697$ ,  $df = 377$ ,  $p < 0.001$ , RMSEA = 0.150), indicating that there is no serious problem of common method bias.

Furthermore, we employed the latent variable models with marker variables to check the common method bias issue (Richardson *et al.*, 2009; Simmering *et al.*, 2015; Williams *et al.*, 2010). We introduced a marker variable, negative anticipated emotions (Odu & Schill, 2020) and created a series of CFA models: baseline model, method-C model, Method-U Model, and Method-R Model. The results show that the common method bias is not significant. More detailed steps and information can be seen in Appendix G.

[Table\_3\_here]

#### 4.4 Hypothesis testing

We conducted path analysis in Mplus. The results in Table 4 suggest that both informational and normative influences are positively associated with purchase intentions ( $b_I = 0.212$ ,  $b_N = 0.253$ ,  $p < 0.001$ , Model 3e). Model 3f in Table 4 shows that positive moral emotion is positively associated with purchase intention ( $b = 0.361$ ,  $p < 0.001$ ). After entering the mediators into the regression, the relationship between informational influence and purchase intentions was no longer significant ( $b = 0.059$ , *n.s.*), and the relationship between normative influence and purchase intentions was weaker ( $b = 0.104$ ,  $p < 0.05$ ).

The bootstrapping results show that the indirect effect of informational influence on purchase intention via positive moral emotions (estimate = 0.094, 95% CI = [0.043, 0.156]) and that of normative influence on purchase intention via positive moral emotions (estimate = 0.096, 95% CI = [0.041, 0.168]) are significant, thereby supporting H2a and H2b.

Model 3f in Table 4 shows that self-efficacy is positively associated with purchase

intention ( $b = 0.332, p < 0.001$ ). The indirect effect of informational influence on purchase intention via self-efficacy (estimate = 0.060, 95% CI = [0.019,0.108]) and that of normative influence on purchase intention via self-efficacy (estimate = 0.053, 95% CI = [0.014,0.102]) are significant, thereby supporting H3a and H3b.

[Table\_4\_here]

Model 3b and Model 3d show that the interaction term of informational influence and tie strength is not significantly associated with positive moral emotions ( $b = 0.015, n.s.$ ) but is positively associated with self-efficacy ( $b = 0.095, p < 0.001$ ). The interaction term of normative influence and tie strength is significantly associated with positive moral emotions ( $b = 0.056, p < 0.05$ ) but not with self-efficacy ( $b = -0.020, n.s.$ ). Figure 8 further plots the moderating effects. A simple slope test further shows that informational influence was more positively associated with self-efficacy in terms of the presence of strong tie peers ( $b = 0.494, t = 5.378, p < 0.001$ ) than with weak tie peers ( $b = 0.123, t = 2.238, p = 0.025$ ); additionally, the slope difference was significant ( $\Delta b = 0.371, p < 0.001$ ). Furthermore, the indirect effect of informational influence on purchase intention via self-efficacy is significant in terms of the presence of strong ties (estimate = 0.170, 95% CI = [0.084,0.268]) but insignificant in terms of weak tie peers (estimate = 0.042, 95% CI = [-0.014,0.098]), and their difference is significant (estimate = 0.128, 95% CI = [0.046,0.239]). Therefore, H4a and H5a are supported. In addition, in both the strong tie situation (estimate = 0.135, 95% CI = [0.046,0.239]) and the weak tie situation (estimate = 0.113, 95% CI = [0.048,0.193]), positive moral emotions mediate the association between informational influence and EFP purchase intention, without a significant difference (estimate = 0.022, 95% CI = [-0.072,0.105]).

[Figure\_8\_here]

A simple slope test shows that normative influence was more positively associated

with positive moral emotions in terms of strong tie peers ( $b = 0.483$ ,  $t = 4.896$ ,  $p < 0.001$ ) than with weak tie peers ( $b = 0.264$ ,  $t = 4.462$ ,  $p < 0.001$ ); additionally, the slope difference was significant ( $\Delta b = 0.219$ ,  $p = 0.040$ ). Furthermore, the indirect effects of normative influence on purchase intention via positive moral emotions are both significant in terms of the presence of strong tie peers (estimate = 0.177, 95% CI = [0.078, 0.305]) and of weak tie peers (estimate = 0.097, 95% CI = [0.035, 0.173]), and their difference is significant (estimate = 0.080, 95% CI = [0.003, 0.193]). H4b and H5b received support. In addition, in the weak-tie situation (estimate = 0.072, 95% CI = [0.019, 0.133]), self-efficacy mediates the association between normative influence and EFP purchase intention, but not in the strong-tie situation (estimate = 0.044, 95% CI = [-0.008, 0.107]), and no significant difference was found (estimate = -0.027, 95% CI = [-0.108, 0.042]). Figure 9 shows the mediation paths under different tie strengths.

[Figure\_9\_here]

## 5. Discussion and Conclusions

Through conducting two sequential studies with different research designs, we found that peer influence on social media, rather than marketer influence, contributes to consumers' EFP purchases. Literature indicates that owned media contributes to brand awareness while earned media benefits purchase intentions (Colicev *et al.*, 2018). Our findings regarding MGC and UGC support these results.

In addition to existing knowledge that earned media promotes enjoyment among consumers (Lovett & Staelin, 2016), we further demonstrate that both informational and normative influences on social media are associated with EFP-relevant behaviors. We incorporate dual process framework to reveal the underlying mechanism of peer influence, showing that UGC provides individuals with opportunities to learn from their peers. Furthermore, by introducing the role of tie strength, we detected the closeness

between peers from offline to online, thereby extending the application of social influence theory.

Interestingly, the relationships between informational influence and self-efficacy and between normative influence and positive moral emotions are more significant under strong tie situations, indicating that strong tie peers can exert stronger social influence both through emotional and cognitive reactions. However, tie strength fails to moderate the association between informational influence and positive moral emotions. We interpret this as follows: despite the less relevant modeling effect, informational influence from weak-tie peers can satisfy individuals' curiosity about distinct eco-friendly information (Dubois *et al.*, 2016); therefore, positive moral emotions can still be evoked. Additionally, tie strength also fails to amplify the association between normative influence and environmental self-efficacy. We suggest that while individuals care about being accepted and included by their strong-tie peers, this desire for belongingness can also bring peer pressure, potentially leading to stress and anxiety. These negative emotions can undermine their confidence in their own abilities to deal with environmental problems.

We further confirmed the moderated mediation effects. Both strong tie peers' or weak tie peers' influence can arouse individuals' immediate and experiential reactions (i.e., moral emotions) leading to increased EFP purchase intention. However, only informational influence from strong tie peers or normative influence from weak tie peers can stimulate one's analytic reactions (i.e., efficacy), which further drive EFP purchase intention. When it comes to analytic reactions, individuals become more sensitive to processing social information.

### *5.1 Theoretical contributions*

This study makes several theoretical contributions. First, to the best of our knowledge,

this paper is a pioneer in comparing the effects of peer influence versus marketer influence on consumers' EFP purchases. Leveraging on this specific product, we contribute to the ongoing debate on the effectiveness of UGC versus MGC. Our evidence suggests that only peer influence on social media contributes to EFP purchases.

Consumers are attracted by EFPs because these products can satisfy their desire for high-quality lives and affiliations with social exemplars (Seegebarth *et al.*, 2019). However, due to a lack of knowledge, consumers are wary of exaggerated information from marketers. Peers, on the other hand, provide a foundation for shared values and norms, demonstrating stronger social influence than marketers on EFP purchases. Hence, this study updates the empirical understanding of the social influence theory as it relates to eco-friendly social behaviors and offers insights into when UGC is more effective than MGC.

Second, we offer a new perspective on the effect of UGC on consumer behaviors. Previous studies have highlighted the role of UGC engagement volume and UGC content positivity in influencing consumers' attitudes and purchase decisions (Ray *et al.*, 2021) by investigating UGC from the exhibitor perspective. In contrast, our study examines the informational and normative influence that consumers perceive by interacting with peers in UGC, investigating UGC from the receiver side. Our study extends the UGC literature through the lens of peer influence, demonstrating that peer influence can immediately arouse receivers' emotional responses toward peers' ethical behaviors and enhance their deep cognition, such as environmental self-efficacy, by learning from their peers. Both emotional and cognitive responses reinforce receivers' ethical behaviors (e.g., EFP purchases). This conclusion also broadens the UGC literature, which has predominantly focused on the mechanism of peer trustworthiness and enjoyment enhancement, which often neglecting other mechanisms.

Furthermore, our study provides evidence that the effectiveness of peer influence depends on tie strength with peers. While supporting the existing literature that strong tie with peers exert more influential social impact on individuals (Shen *et al.*, 2016), our study also advances the literature by clarifying the underlying reasons. Strong-tie peers are more influential in facilitating one's self-efficacy because they provide genuine and useful information. They are also adept at arousing an emotional response, as people are more willing to affiliate with them. Furthermore, we found that normative influence from strong tie peers mostly depends on positive moral emotions rather than self-efficacy to regulate individuals' EFP purchase intention. Conversely, informational influence from weak-tie peers depends on positive moral emotions rather than self-efficacy to affect individuals' EFP purchase intentions. By incorporating tie strength into the peer influence literature, we clarify the different roles of informational and normative influence in the social media context.

Additionally, we update social influence theory by showcasing that the closeness between peers applies to both offline to online interactions. We also consider peer closeness from a subjective perspective way rather than an objective one, offering a new approach to measure peer relationship strength under social influence.

### *5.2 Practical implications*

This study also provides several important practical implications. First, we suggest that social media marketers should target strong-tie social media networks for disseminating informational content. In the strong-tie setting, social media marketers encourage UGC to provide detailed information or feedback about eco-friendly products within the strong-tie social networks (e.g., close friends, family groups, niche communities). Emotional self-efficacy is more likely to mediate the impact of informational content

in strong-tie social communities, as these relationships often carry more trust and influence, making users more receptive to informational UGC. Additionally, social media marketers should recognize the power of storytelling to create emotional connections with the audience. By highlighting the emotional impact of eco-friendly products, social media marketers can inspire and motivate users to share their own stories, making the content more engaging and impactful. This approach can help amplify the reach and effectiveness of marketing campaigns within strong-tie networks, leveraging the trust and emotional bonds that exist in these communities.

Social media marketers should focus on normative UGC in weak-tie networks. In weak-tie networks (e.g., acquaintances, broader social platforms), Social media marketers emphasise UGC and showcase social norms and community standards regarding eco-friendly behaviours and products. For instance, collaborating with influencers to encourage users to share reviews and endorsements of eco-friendly products can effectively shape normative beliefs in broader, less intimate social networks. Social media marketers can cultivate a sense of community and shared values towards environmental sustainability. This can help individuals in weak-tie networks feel part of a more significant movement, boosting their emotional self-efficacy. Social media marketers can engage users in trend-based campaigns to leverage trending topics and challenges related to eco-friendly practices to create a sense of participation and belonging among users in weak-tie networks.

In addition, our study offers general social media marketing strategies to enhance environmental self-efficacy, such as educational campaigns. Such campaigns provide

content that educates users on how their individual actions can contribute to environmental sustainability, thereby boosting their environmental self-efficacy. Also, using interactive content such as quizzes, polls, and challenges encourages users to reflect on and increase their ecological self-efficacy. Furthermore, social media markets can tailor content for different engagement levels. This requires identifying and segmenting your audience based on their engagement strength (strong-tie vs. weak-tie) to tailor your UGC strategies, accordingly, continuously monitoring and analysing the engagement levels of your audience to refine your UGC strategies, ensuring they align with the findings on emotional self-efficacy mediation.

### *5.3 Limitations and future directions*

This study contains certain limitations that provide research opportunities for future investigations. First, Study 1 found that peer influence was significantly associated with sales, while marketer influence was not. However, the relationships between MGC posts and MGC likes/bookmarks/shares/comments/shares are more robust than those between UGC posts and UGC likes/bookmarks/shares/comments/shares. These results indicate that marketer influence is more helpful in attracting attention, while peer influence is more useful in promoting sales. The different effect of UGC and MGC may also lie in the distinct types of content. UGC may highlight actual experience with the products, while MGC may focus on product features. Therefore, future studies can further investigate the content distinction between information or norms conveyed by UGC and MGC. Furthermore, future studies should also consider how sponsored UGC affect consumer behaviors on green consumption.

Second, in this research, we exclusively focus on non-sponsored UGC, defining it

as media content created and shared by users without formal brand incentives or control. It is worth noting that literature also acknowledges another type of UGC, termed sponsored UGC (Burmann, 2010). Sponsored UGC is created by individuals who receive compensation from the brand, potentially implying some degree of creative control (Davicik *et al.*, 2022). Future research could delve into examining the potential disparities in effects between sponsored and non-sponsored UGC on consumers' decisions to purchase eco-friendly products. For example, future research could investigate whether sponsored UGC raise consumers' suspicion about the non-commercial purpose of eco-friendly content, thereby decreasing their trust in social media peers and reducing their likelihood of following such behaviors.

Third, future studies should also consider the relationship between forms of interaction in social media and consumer behaviors. Although our results in Study 1 shows that various interactions such as like, forward, or bookmark are associated with consumer behaviors in a similar way, it still leaves room to discuss whether distinct interactions matter in affecting consumers attitude and following behaviors. Furthermore, our study did not incorporate the consideration of EFP prices. Given that the relatively higher prices of EFPs could alter consumer purchasing decisions, including this factor would have offered a more comprehensive perspective. Future research conducting a comparative analysis of EFP prices might elucidates eco-friendly consumer behaviors in more nuanced scenarios. In addition, Study 2 used self-report survey answers to measure critical variables. Future studies can utilize longitudinal survey data or multiple-source designs to rule out the potential threat of common method variance.

Last but not least, individuals from different culture contexts may have distinct attitudes toward peers, eco-friendly products or even social media engagement. For

example, due to collectivism, Chinese individuals may view acceptance or recognition from close peers on social media as important. Current studies also start to think about the country differences in social media accessibility and engagement (Liadeli *et al.*, 2023). Thus, our model can further be examined in other culture contexts.

## References

- Albuquerque, P., Pavlidis, P., Chatow, U., Chen, K.Y. and Jamal, Z.(2012),“Evaluating promotional activities in an online two-sided market of user-generated content”, *Marketing Science*, Vol.31 No.3, pp.406–432.
- Arazy, O., Kumar, N. and Shapira, B.(2010),“A theory-driven design framework for social recommender systems”, *Journal of the Association for Information Systems*, Vol.11 No.9, pp.455–490.
- Bagozzi, R.P. and Dholakia, U.M. (2002),“Intentional social action in virtual communities”, *Journal of Interactive Marketing*, Vol.16 No.2, pp.2–21.
- Bagozzi, R.P., Belanche, D., Casaló, L.V. and Flavián, C. (2016),“The role of anticipated emotions in purchase intentions”, *Psychology & Marketing*, Vol.33, pp.629–645.
- Bandura, A. (2001),“Social cognitive theory: An agentic perspective”, *Annual Review of Psychology*, Vol.52, pp.1–26.
- Bearden, W.O., Netemeyer, R.G. and Teel, J.E. (1989),“Measurement of consumer susceptibility to interpersonal influence”, *Journal of Consumer Research*, Vol.15 No.4, pp.473–481.
- Burmman, C. (2010), “A call for user-generated branding”, *Journal of Brand Management*, Vol. 18 No. 1, pp. 1-4.
- Cao, D., Meadows, M., Wong, D. and Xia, S., (2021),“Understanding consumers’ social media engagement behaviour: An examination of the moderation effect of social media context”, *Journal of Business Research*, Vol.122, pp.835–846.
- Cao, D., Meadows, M. and Ma, X. (2024), “Thinking fast and slow: a revised SOR model for an empirical examination of impulse buying at a luxury fashion outlet”, *European Journal of Marketing*, Vol. 58 No.1, 342-368.
- Chen, Z. and Berger, J. (2013),“When, Why, and How Controversy Causes Conversation”, *Journal of Consumer Research*, Vol.40 No.3, pp.580–593.
- Chevalier, J.A. and Mayzlin, D. (2006),“The effect of word of mouth on sales: Online book reviews”, *Journal of Marketing Research*, Vol.43 No.3, pp.345–354.
- Chu, S-C., Chen, H-T. and Gan, C. (2020),“Consumers’ engagement with corporate social responsibility (CSR) communication in social media: Evidence from China and the United States”, *Journal of Business Research*, Vol.110, pp.260–271.
- Chung, C. and Tsai, Q. (2009),“The effects of regulatory focus and tie strength on word-of-mouth behavior”, *Asia Pacific Journal of Marketing and Logistics*, Vol.21 No.3, pp.329–341.
- Colicev, A., Malshe, A., Pauwels, K. and O'Connor, P. (2018), “Improving consumer mindset metrics and shareholder value through social media: The different roles of owned and earned media”, *Journal of Marketing*, Vol.82 No.1, pp.37-56.
- Colicev, A., Kumar, A. and O'Connor, P. (2019), “Modeling the relationship between firm and user generated content and the stages of the marketing funnel”, *International Journal of Research in Marketing*, Vol.36 No.1, pp.100–116.
- Davcik, N.S., Langaro, D., Jevons, C. and Nascimento, R. (2022), "Non-sponsored brand-related user-generated content: effects and mechanisms of consumer engagement", *Journal of Product & Brand Management*, Vol. 31 No. 1, pp.163–174.

- De Bruyn, A. and Lilien, G.L. (2008), "A multi-stage model of word-of-mouth influence through viral marketing", *International Journal of Research in Marketing*, Vol.25 No.3, pp.151–163.
- De Dreu, C.K.W., Baas, M. and Nijstad, B.A. (2008), "Hedonic tone and activation level in the mood–creativity link: Toward a dual pathway to creativity model", *Journal of Personality and Social Psychology*, Vol.94 No.5, pp.739–756.
- Dhar, V. and Chang, E. (2009), "Does chatter matter? The impact of user-generated content on music sales", *Journal of Interactive Marketing*, Vol.23, pp.300–307.
- Dholakia, U.M., Bagozzi, R.P. and Pearo, L.K. (2004), "A social influence model of consumer participation in network- and small-group-based virtual communities", *International Journal of Research in Marketing*, Vol.21, pp.241–263.
- Dubois, D., Bonezzi, A. and De Angelis, M. (2016), "Sharing with friends versus strangers: How interpersonal closeness influences word-of-mouth valence", *Journal of Marketing Research*, Vol.53 No.5, pp.712–727.
- Evans, J.S.B.T. (2008), "Dual-processing accounts of reasoning, judgment, and social cognition", *Annual Review of Psychology*, Vol.59, pp.255–278.
- Evans, J.S.B.T. (2010), *Thinking twice: Two minds in one brain*, Oxford University Press, Oxford, England.
- Fink, M., Koller, M., Gartner, J., Floh, A. and Harms, R. (2018), "Effective entrepreneurial marketing on Facebook – A longitudinal study", *Journal of Business Research*, Vol.113, pp.149–157.
- Gao, B., Li, Z. and Yan, J. (2022), "The influence of social commerce on eco - friendly consumer behavior: Technological and social roles", *Journal of Consumer Behaviour*, Vol.21, pp.653–672.
- Gibbons, D.E. (2004), "Friendship and advice networks in the context of changing professional values", *Administrative Science Quarterly*, Vol.49 No.2, pp.238–262.
- Granovetter, M.S. (1973), "The strength of weak ties", *American Journal of Sociology*, Vol.78 No.6, pp.1360–1380.
- Goh, K.Y., Heng, C.S. and Lin, Z. (2013), "Social media brand community and consumer behavior: Quantifying the relative impact of user- and marketer-generated content", *Information Systems Research*, Vol.24 No.1, pp.88–107.
- Goldenberg, J., Libai, B. and Muller, E. (2001), "Talk of the network: A complex systems look at the underlying process of word-of-mouth", *Marketing Letters*, Vol.12, pp.211–223.
- Haidt, J. (2003), "The moral emotions", Davidson, R. J., Scherer, K. R. and Goldsmith, H.H.(Eds.), *Handbook of Affective Sciences*. Oxford University Press: Oxford, England, pp.852–870.
- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (1998), *Multivariate data analysis*. Prentice hall, Upper Saddle River, NJ.
- Hareli, S. and Rafaeli, A. (2008), "Emotional cycles: On the social influence of emotion in organizations", *Research in Organizational Behavior*, Vol.28, pp.35–59.
- Hautz, J., Füller, J., Hutter, K. and Thürndl, C. (2014), "Let users generate your video ads? The impact of video source and quality on consumers' perceptions and intended behaviors", *Journal of Interactive Marketing*, Vol.28 No.1, pp.1–15.
- Hu, M., Chen, J., Chen, Q. and He, W. (2020), "It pays off to be authentic: An examination of direct versus indirect brand mentions on social media", *Journal of Business Research*, Vol.117, pp.19–28.
- Hu, J. and Liden, R.C. (2013), "Relative leader–member exchange within team

- contexts: how and when social comparison impacts individual effectiveness”, *Personnel Psychology*, Vol.66 No.1, pp.127–172.
- Huang, H.(2016),“Media use, environmental beliefs, self-efficacy, and pro-environmental behavior”, *Journal of Business Research*, Vol.69 No.6, pp.2206–2212.
- Kim, Y. and Choi, S.M. (2005),“Antecedents of green purchase behavior: An examination of collectivism, environmental concern, and PCE”, *Advances in Consumer Research*, Vol.32, pp.592–599.
- Kuan, K.K., Zhong, Y. and Chau, P.Y. (2014),“Informational and normative social influence in group-buying: Evidence from self-reported and EEG data”, *Journal of Management Information Systems*, Vol.30 No.4, pp.151–178.
- Kumar, A., Bezawada, R., Rishika, R., Janakiraman, R. and Kannan, P.K. (2016),“From social to sale: The effects of firm-generated content in social media on customer behavior”, *Journal of Marketing*, Vol.80 No.1, pp.7–25.
- Kübler, R.V., Colicev, A. and Pauwels, K.H. (2020),“Social media’s impact on the consumer mindset: When to use which sentiment extraction tool?”, *Journal of Interactive Marketing*, Vol.50, pp.136–155.
- Lim, Y., Chung, Y. and Weaver, P.A. (2012),“The impact of social media on destination branding”, *Journal of Vacation Marketing*, Vol.18 No.3, pp.197–206.
- Liadeli, G., Sotgiu, F. and Verlegh, P. W. J. (2023), “A meta-analysis of the effects of brands’ owned social media on social media engagement and sales”, *Journal of Marketing*, Vol.87 No.3, pp.406–427.
- Liu, S., Luksyte, A., Zhou, L., Shi, J. and Wang, M. (2014),“Overqualification and counterproductive work behaviors: Examining a moderated mediation model”, *Journal of Organizational Behavior*, Vol.36 No.2, pp.250–271.
- Lovett, M. J. and Staelin, R. (2016), “The role of paid, earned, and owned media in building entertainment brands: Reminding, informing, and enhancing enjoyment”, *Marketing Science*, Vol.35 No.1, pp.142–157.
- Lu, L., Chang, W. and Chang, H. (2014), “Consumer attitudes toward blogger’s sponsored recommendations and purchase intention: The effect of sponsorship type, product type, and brand awareness”, *Computers in Human Behavior*, Vol.34, pp.258–66.
- Mangleburg, T.F., Doney, P.M., Bristol, T. (2004),“Shopping with friends and teens’ susceptibility to peer influence”, *Journal of Retailing*, Vol.80 No.2, pp.101–116.
- Moe, W.W. and Trusov, M. (2011),“The value of social dynamics in online product ratings forums”, *Journal of Marketing Research*, Vol.48 No.3, pp.444–456.
- Noguti, V. (2022),“Consumption of marketer-generated content: Consumers as curators of marketing messages that they consume on social media”, *European Journal of Marketing*, Vol.56 No.12, pp.3545–3567.
- Odou, P. and Schill, M. (2020), “How anticipated emotions shape behavioral intentions to fight climate change”, *Journal of Business Research*, Vol.121, pp.243–253.
- Onofrei, G., Filieri, R. and Kennedy, L. (2022),“Social media interactions, purchase intention, and behavioural engagement: The mediating role of source and content factors”, *Journal of Business Research*, Vol.142, pp.100–112.
- Ray, A., Bala, P.K. and Rana, N.P. (2021),“Exploring the drivers of customers’ brand attitudes of online travel agency services: A text-mining based approach”, *Journal of Business Research*, Vol.128, pp.391–404.
- Richardson, H. A., Simmering, M. J. and Sturman, M. C. (2009), “A tale of three perspectives: Examining post hoc statistical techniques for detection and correction of common method variance”, *Organizational Research Methods*, Vol.

- 12 No.4, pp.762–800.
- Santiago, J., Borges-Tiago, M.T. and Tiago, F. (2022), “Is firm-generated content a lost cause?”, *Journal of Business Research*, Vol.139, pp.945–953.
- Santos, M.L.B.D. (2022). “The “so-called” UGC: An updated definition of user-generated content in the age of social media”, *Online Information Review*, Vol.46 No.1, pp.95–113.
- Seegebarth, B., Backhaus, C. and Woisetschlager, D.M. (2019), “The role of emotions in shaping purchase intentions for innovations using emerging technologies: A scenario-based investigation in the context of nanotechnology”, *Psychology & Marketing*, Vol.36 No.9, pp.844–862.
- Shen, G., Chiou, J-S., Hsiao, C-H., Wang, C-H. and Li, H-N. (2016), “Effective marketing communication via social networking site: The moderating role of the social tie”, *Journal of Business Research*, Vol.69 No.6, pp.2265–2270.
- Simmering, M. J., Fuller, C. M., Richardson, H. A., Ocal, Y. and Atinc, G. M. (2015), “Marker variable choice, reporting, and interpretation in the detection of common method variance: A review and demonstration”, *Organizational Research Methods*, Vol.18 No.3, pp.473–511.
- Song, T., Huang, J., Tan, Y. and Yu, Y. (2019), “Using user- and marketer-generated content for box-office revenue prediction: Differences between micro-blogging and third-party platforms”, *Information Systems Research*, Vol.30 No.1, pp.191–203.
- Tang, T., Fang, E. and Wang, F. (2014), “Is neutral really neutral? The effects of neutral user-generated content on product sales”, *Journal of Marketing*, Vol.78 No.4, pp.41–58.
- Tierney, P. and Farmer, S.M. (2002), “Creative self-efficacy: Its potential antecedents and relationship to creative performance”, *Academy of Management Journal*, Vol.45 No.6, pp.1137–1148.
- Tirunillai, S. and Tellis, G.J. (2012), “Does chatter really matter? Dynamics of user-generated content and stock performance”, *Marketing Science*, Vol. 31 No. 2, pp. 198–215.
- Wallace, E., Buil, I., de Chernatony, L. and Hogan, M. (2014), “Who “likes” you ... and why? A typology of facebook fans”, *Journal of Advertising Research*, Vol.54 No.1, pp.92–109.
- Wang, X., Yu, C. and Wei, Y. (2012), “Social media peer communication and impacts on purchase intentions: A consumer socialization framework”, *Journal of Interactive Marketing*, Vol.26 No.4, pp.198–208.
- Wang, Z. and Kim, H. G. (2017), “Can social media marketing improve customer relationship capabilities and firm performance? Dynamic capability perspective”, *Journal of Interactive Marketing*, Vol.39, pp.15–26.
- Wei, J., Zhao, X.L., Liu, Y.J. and Yang, X. (2021), “Measuring purchase intention towards green power certificate in a developing nation: Applying and extending the theory of planned behavior”, *Resources, Conservation and Recycling*, Vol.168, 105363.
- Williams, L. J., Hartman, N. and Cavazotte, F. (2010), “Method variance and marker variables: A review and comprehensive CFA marker technique”, *Organizational Research Methods*, Vol.13 No.3, pp.477–514.
- Yakubovich, V. (2005), “Weak ties, information, and influence: How workers find jobs in a local russian labor market”, *American Sociological Review*, Vol.70 No.3, pp.408–421.
- Yan, L., Keh, H.T. and Chen, J. (2021), “Assimilating and differentiating: The curvilinear effect of social class on green consumption”, *Journal of Consumer*

- Research*, Vol.47 No.6, pp.914–936.
- Yang, S., Lin, S, Carlson, J.R., Ross, W.T. (2016),“Brand engagement on social media: Will firms’ social media efforts influence search engine advertising effectiveness?”, *Journal of Marketing Management*, Vol.32, pp.526–557.
- Yang, X., Cao, D., Andrikopoulos, P., Yang, Z. and Bass, T. (2020),“Online social networks, media supervision and investment efficiency: An empirical examination of Chinese listed firms”, *Technological Forecasting and Social Change*, Vol.154, 119969.
- Yang, Z., Wang, J. and Mourali, M. (2015),“Effect of peer influence on unauthorized music downloading and sharing: The moderating role of self-construal”, *Journal of Business Research*, Vol.68 No.3, pp.516–525.
- Yu, M., Cao, D. and Tan, J.Y. (2018), “CSR-consumption paradox: Examination of UK apparel companies”, *Journal of Fashion Marketing and Management: An International Journal*, Vol. 23 No. 1, 124-137.
- Zhang, M., Zhang, Y., Zhao, L. and Li, X. (2020),“What drives online course sales? Signaling effects of user-generated information in the paid knowledge market”, *Journal of Business Research*, Vol.118, pp.389–397.
- Zhang, W., Chintagunta, P.K. and Kalwani, M.U. (2021),“Social media, influencers, and adoption of an eco-friendly product: Field experiment evidence from rural China”, *Journal of Marketing*, Vol.85 No.3, pp.10–27.
- Zhao, K., Zhang, P. and Lee, H. M. (2022),“Understanding the impacts of user- and marketer - generated content on free digital content consumption”, *Decision Support Systems*, Vol.154, 113684.