# Exploring the role of internal social media in fostering employee green behavior (EGB)

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ABSTRACT

Previous research has consistently highlighted the impact of internal communication strategies on employees' pro-environmental behavior. However, the effect of internal social media on employee green behavior (EGB) and its underlying relationships remains unclear. This study examined green communication strategies used by organizations to encourage EGB on internal social media. Based on two experimental studies, the current research investigated the effect of internal social media post on EGB, and the interplay between message framing and construal levels to evaluate how framed messages of internal social media post trigger employees' self-efficacy in promoting EGB. Study 1 revealed that internal social media messages could effectively encourage employees' self-efficacy and further generate EGB. Following the results of study 1, study 2 revealed that loss-framed messages paired with a concrete condition on internal social media effectively induce employees' self-efficacy and encourage EGB. The results demonstrated that the most effective communication strategy for delivering green messages on internal social media is to induce employees' self-efficacy. Social media messages can inspire employees who do not currently engage in EGB to take action and adopt green practices. Thus, marketing managers of the organizations can create novel framed internal social media posts to encourage employees to engage in EGB.

## 1. Introduction

The current organizational focus was on the activities and associational complexities inducing high stakeholder demands and other performance target practices. The environmental aspect is an important indicator to improve organizational performance [1–3]. Therefore, businesses made efforts to include environmental concepts in their activities and operations. Employee green behavior (EGB) comes out as one of those main notions which would be of undeniable importance in formulation and implementation of the policy of green thinking and sustainability. According to Davis et al. [[4], p.336], EGB is defined as "scalable actions and behaviors that employees engage in or bring about that are linked with, and contribute to, environmental sustainability". Employees engage 70 % of the time at work in activities that may explicitly or implicitly detriment environmental sustainability, including the use of electrical appliances, air-conditioning, disposable

materials and paper [5]. Employees engaged in EGB can largely and effectively reduce carbon footprint and enhance environmental performance of organizations. In this vein, the EGB is a distinct study area with accordance to extensive research [6].

With the remarkable influence of social media, the impact of social media messages on external customers has been widely studied and validated [7–10]. Social media enables interactive interaction, including feedback and discussion that may promote a sense of unity while stimulating participation in sustainable behavior. Social media offers a powerful way to reach and engage external customers who are the end-users, clients or consumers and pay for the products or services [11]. Firms promote their sustainable products and services via internal social media have generated big sales and positive feedback [12]. However, the impact of internal social media on EGB of internal customers (i.e. employees) is underexplored [13]. Organizations might achieve a more significant impact by encouraging EGB through internal

social media posts. While organizations use internal social media for communications and engagement, there are limited studies regarding how internal social media platforms promote EGB, creating a research gap. Therefore, this study aims to investigate (1) the impact of internal social media post on employees' self- efficacy and EGB as well as (2) different types of environmental messages on social media posts that influence employees' self-efficacy and EGB through two experimental designs.

Successful communication strategies are of utmost importance to encourage environmentally conscious actions in employees, especially the utility of internal social media [14]. The message should be interesting and straightforward, emphasizing the advantages of acting environmentally friendly [15]. It is also important to craft content that appeals to the internal customers' interests, values, and age. The message framing (i.e., gain or loss) and construal level (i.e., abstract or concrete) of environmental knowledge can contribute to employees' self-efficacy, leading them to engage in EGB. By emphasizing the importance of embracing innovation for sustainability, employees may be more likely to choose virtual meetings instead of travelling [16]. Messages can be framed as either gain or loss. Loss-framed messages emphasize the downsides of not engaging in EGB, whereas gain-framed messages motivate employees to take targeted actions with the positive aspect [17]. Among gain and loss messages, previous research emphasized the effectiveness of using the negative message, especially to generate sustainable behavior [18]. Negative reinforcement involves removing or avoiding an unpleasant stimulus to increase the likelihood of a particular behavior being repeated [19]. Negative reinforcement can be an important tool to help reinforce positive behaviors and discourage negative behaviors. Therefore, we proposed that a loss message could enhance EGB of employees since it highlights negative environmental consequences, presents fear appeals and provides negative feedback.

In addition, the construal level entails that mental representation, judgment, and choice are directly influenced by psychological distancing, including two dimensions, concrete and abstract [20]. A concrete message is psychologically closer to the message receivers, which is also more memorable, actionable, and motivating for actions [21]. Therefore, based on psychological distance, we propose that environmental messages with concrete features might encourage EGB better than abstract features. Consequently, we propose that loss and concrete are important features to produce a compelling environmental message and generate EGB.

Studies [22–24] have emphasized factors affecting the sustainable behaviors of employees by adopting the theory of planned behavior (TPB) explain sustainable behavior. Self-efficacy is important among employees as they can create a sense of responsibility and stewardship towards the environment. According to TPB, self-efficacy is the perceived capability of oneself to complete a task [25]. Drawing on TPB, we confirm that self-efficacy is an essential underlying mechanism between environmental messages and EGB; thus, we examine whether framed environmental messages on internal social media could generate self-efficacy and further generate EGB at workplace.

This paper offers several theoretical and practical implications by employing two online experimental studies. First, we contribute to the literature on sustainable management practices. By testing the interaction of message framings and construal levels in internal social media posts, we discover the effective environmental messages via internal social media to employees to perform EGB. Second, previous research adopted TPB mainly in cross-sectional studies [26,27]. This study verifies TPB with online experimental marketing and environmental communication design and examines the importance of self-efficacy as an underlying mechanism to encourage EGB. Third, although message framing and construal level have long been examined in the fields of tourism [28], biodiversity conservation [29], and health communication [30], to our knowledge, scant studies investigated the effectiveness of the interaction in the field of digital environmental communication

within organizations. This study validates the interaction and the utility of message framing and construal level in digital environmental communication on EGB.

Therefore, we proposed two research questions in this paper. (1) Is employees' self-efficacy an essential underlying mechanism to induce EGB? (2) What types of environmental framed messages on internal social media can generate employees' self-efficacy and further engage in EGB?

The current research sought to answer these questions by examining different types of environmental messages that trigger employees' self-efficacy through two online experiments. The first experiment tested the effectiveness of internal social media posts in encouraging employees' self-efficacy and EGB (Study 1). The second experiment investigated the interaction between message framing and construal levels in explaining employees' self-efficacy and EGB (Study 2).

## 2. Theoretical background

### 2.1. Message framing

Tversky and Kahneman [31] developed prospect theory to describe how people choose between risky options, and it is applied in message delivery, including gain-framed and loss-framed messages [32,17]. Gain-framed messaging emphasizes the advantages of performing the targeted behavior, whereas loss-framed messages emphasize the disadvantages of avoiding it. Message framing is crucial to developing pro-environmental literacy and has been widely adopted in environmental messages to promote EGB [33,34]. For instance, Li et al. [35] examined the effect of self-regulatory fit theory with different types of message framing on food saving, and Decrinis et al. [36] investigated employee's environmental values, identity, and personal norms in conserving energy through different types of message framing. Dai et al. [33] evaluated the effect of message framing and language intensity on the willingness to perform EGB. Therefore, this study examines the utility of message framing in generating EGB.

### 2.2. Construal levels

Construal level theory (CLT) addresses the effect of psychological distance on mental representation, judgement, and choice [37]. According to CLT, objects, events, and individuals are represented in human minds as psychologically close or distant, which suggests that the more psychologically distant the message of an event from the receiver, the more abstract and the higher the construal level, whereas the more psychologically close the message from the receiver, the more concrete and the lower the construal level. Psychological distance can vary in dimensions, such as spatial, temporal, internal social, and hypothetical distance. At the concrete construal level, individuals process information about peripheral and detailed aspects in terms of specific, subordinate, and contextualized features [38]—messages presented at a concrete construal level address how the event happened. In contrast, at the abstract construal level, individuals process information more abstractly by looking at the bigger picture in terms of general, superordinate, and decontextualized features. Therefore, a message presented with an abstract construal level emphasizes why people do things, explaining the reasons for the event. Han et al. [39] applied construal levels to recycling intention, such as recycling in concrete processes (i.e., "I will recycle by separating recyclable waste") or for abstract purposes (i.e., "I will recycle to help the environment").

### 2.3. Congruence between message framing and construal levels

Some studies have suggested that loss-framed messages are more effective than gain-framed messages in detection behaviors, consumer behaviors [40], and conservation behaviors [41]. According to negative reinforcement, loss-framed messages can be particularly effective in

generating pro-environmental behavior among internal customers, who tend to be more responsive to messages that emphasize potential losses [42]. By highlighting the negative consequences of not engaging in green behavior, such as the loss of natural resources or the negative impacts of climate change, employees can be motivated to act and adopt sustainable practices at work. Jaeger and Weber [41] highlighted that a salient and psychologically close message is more effective in generating behavior. Therefore, in addition to addressing messages that frame with gain or loss, this study introduced construal levels as psychological distance in message delivery. Studies have argued that loss-framed messages activate concrete construal levels. In contrast, gain-framed messages activate abstract construal levels by enhancing people's attitudes toward green practices at work (Cha [2]). The matches of conditions are consistent with the level of environmental concern and depend on the temporal construal principle. This study integrated prospect theory and explore how green messages can be designed to encourage self-efficacy and EGB.

### 2.4. Self-efficacy and EGB

According to internal social cognitive theory, self-efficacy refers to a person's belief in their ability to achieve a certain level of accomplishment [43]. According to Bandura [44], self-efficacy influences response competence, emotional responses, aspirations, ambitions, and perspectives of obstacles and possibilities. Self-efficacy allows employees to view themselves as capable and motivate themselves to act EGB. Studies have suggested a positive association between self-efficacy and behavioral changes in different fields, including education and employee motivation [45], and self-efficacy can be acted as a mediator between personality factors and subjective well-being [46]. In addition, self-efficacy can be a potential moderator of the experience-behavior relationship to promote individuals' behavior [47]. Studies comparing different types of message framing have obtained inconsistent results. In particular, a study conducted in a hotel setting showed that loss-framed messages were more effective than gain-framed messages in influencing self-efficacy in recycling behaviors [38]. In contrast, a case study by Ngo et al. [2] revealed that gain-framed messages were more effective than loss-framed messages in enhancing risk management self-efficacy and influencing intention toward climate change. As employee's understanding of the benefits of performing EGB may be limited, a concrete construal-level message is more appealing to generate self-efficacy. Moreover, research has shown that negative messages are more persuasive than positive messages, as they involve risky implications [18]. Therefore, the present study applied a more detailed design of messages than previous studies by integrating message framing and construal level theory to induce employees' self-efficacy in EGB and create more impactful and compelling messages in organizational policies, and business promotions.

With the increasingly negative impact on the environment of human activities, research on EGB has received growing attention [48,49]. Sustainable practices are built on the fundamental pillars of resources conservation and energy efficiency, which are essential in preventing environmental damage while tackling climate change issues [50]. It is critical for organizations to promote EGB to largely reduce carbon emission levels and increase environmental performance [51]. Employees spend most of their time at work where air conditioning, paper, and other disposable materials are provided consistently. Employees who focus on efficiency may usually ignore the importance of EGB while some employees who focus on environmental sustainability may be aware of their EGB at work. The factors affecting EGB, especially at workplace where different forms of resources can be used freely, are debated [6]. Research suggested that green organizational culture [52], ethical leadership [53], environmental consciousness as the factors affecting EGB. Scant research examines the effect of the message type on EGB, especially via internal social media [54]. Nevertheless, research has suggested self-efficacy as a crucial factor, yet only association is

examined rather than causation [55]. Furthermore, an effective message framing technique that highlights the ecological importance and personal benefits of EGB has the potential to encourage people to adopt green working habits [56]. Employees are more likely to make environmentally conscious choices at work when sustainable options are presented and promoted as reminders. Therefore, it is estimated that when employees perceive the green messages on internal social media, they are more likely to conduct EGB.

### 2.5. Internal social media exposure

Internal social media has become a powerful tool for promoting environmentally responsible behaviors. Internal social media is defined as a internal social networking site that enable employees to stay in touch with employees within the organization [57].

Exposure to environmental messages on internal social media can also increase awareness and knowledge about environmental issues, as well as strengthen the perceived importance and relevance of employees engaging in EGB [9,58]. Studies have shown that internal social media exposure to environmental messages can positively influence employee's attitudes and intentions towards green practices, which can significantly impact environmental sustainability [59]. Internal social media also provides opportunities for social support and reinforcement of green behaviors, access to information and methods for making informed environmental choices [60,61]. Based on previous literature, we argue that internal social media can effectively promote and encourage environmentally friendly behaviors (EGB) by examining the types of messages that enhance self-efficacy, which in turn generate EGB. Therefore, the hypotheses were proposed as follows:

H1: Internal social media exposure is positively related to EGB.
H2: Self-efficacy of employees mediates the relationship between internal social media exposure and EGB.
H3: Self-efficacy of employees moderates the relationship between internal social media exposure with message framing and construal level and EGB.
H4: Self-efficacy of employees is positively related to EGB.

### 2.6. Overview of studies

Two experiments were conducted in this study to investigate (1) the impact of internal social media post on employees' self-efficacy and EGB as well as (2) different types of environmental messages in social media posts that influence employees' self-efficacy and EGB (Fig. 1). The first experiment tested the effectiveness of internal social media posts in encouraging employees' self-efficacy and EGB (Study 1). The second experiment investigated the interaction between message framing and construal levels of social media posts in influencing employees' self-efficacy and EGB (Study 2).

### 3. Experimental design

Study 1 aims to examine the impact of internal social media post on employees' self-efficacy and EGB. In Study 1, participants from selected organizations were invited to read a social media post with a general environmental message (see Appendix A). The post was to encourage pro-environmental behaviors in the workplace, with the wording: "Green office, build a better tomorrow together."

Study 2 aims to examine different types of environmental messages in social media posts that influence employees' self-efficacy and EGB. Study 2 involves a more nuanced design, where participants from the invited organizations were divided into 4 groups; each exposed to a different type of social media post (see Appendix B to Appendix E). The four groups were exposed to the 4 types of social media posts with the
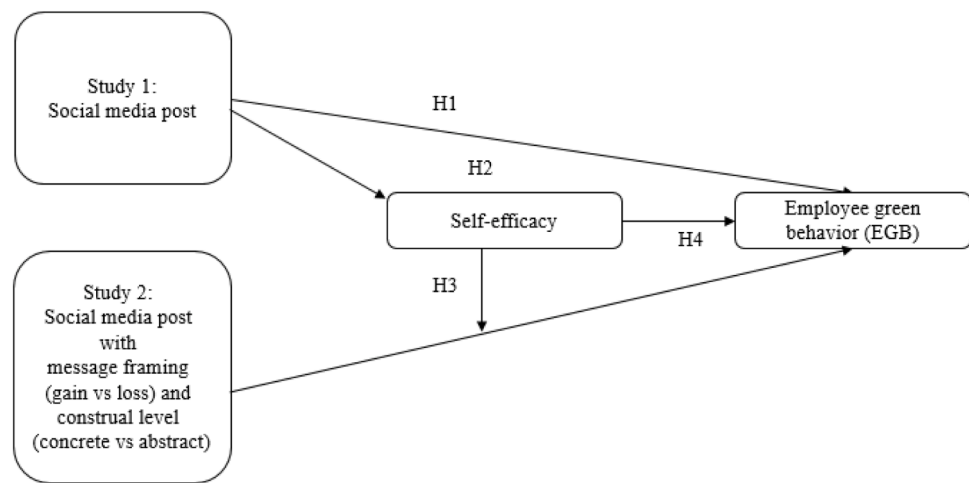
**Fig. 1.** Conceptual framework.

following 4 different messages:

| Group | Message type | Message |
|---|---|---|
| Group 1 | Gain-framed, concrete message | By performing sustainable behaviors (reuse, recycling, and energy conservation), you will save the world, and you can continue to drink clean water. |
| Group 2 | Loss-framed, concrete message | By not performing sustainable behaviors (reuse, recycling, and energy conservation), you will destroy the world, and you can no longer drink clean water. |
| Group 3 | Gain-framed, abstract message | By performing sustainable behaviors (reuse, recycling, and energy conservation), you will save the earth, polar bears can continue to live, and the temperature on earth will remain normal. |
| Group 4 | Loss-framed, abstract message | By not performing sustainable behaviors (reuse, recycling, and energy conservation), you will destroy the earth, polar bears will become extinct, and the temperature on earth will rise abnormally. |

### 3.1. Study 1

#### 3.1.1. Respondents

The outline of the study purpose and the consent forms were emailed to various organizations. Two organizations replied and agreed to participate. After that, employees were informed of the study aims and procedures and agreed to participate. 290 employees were recruited to view an internal social media post with general environmental messages. After that, respondents were invited to answer the questionnaire regarding internal social media exposure, self-efficacy, EGB and demographic characteristics of the respondents, including sex, and age in years (Table 1). To enhance the respondents' understanding, the

**Table 1**
Descriptive statistics of participants.

| | Research sample | |
|---|---|---|
| | *N* | *%* |
| Sex | | |
| Female | 140 | 50.7 % |
| Male | 150 | 49.3 % |
| Age | | |
| 18 to 45 | 165 | 56.9 % |
| 46 to 65 | 125 | 43.1 % |
| Years of working experience | | |
| 1 -5 years | 133 | 45.9 % |
| 6 -10 years | 82 | 28.3 % |
| Over 11 years | 75 | 25.8 % |

question items were all back-translated into Chinese [62].

#### 3.1.2. Measurement instruments

The measurement items from prior studies were used to test the research model's hypotheses (see Table 2), and the level of agreement was measured using a 7-point Likert scale. Internal social media exposures, self-efficacy and EGB were measured using measurement items adapted from Yang et al. [63], Shafiei and Maleksaeidi [64] and Joshi et al. [25] representatively.

#### 3.1.3. Data analysis

Partial least squares structural equation modelling (PLS-SEM) was used to evaluate the research model using Smart-PLS 4 [65]. Covariance-based SEM was rejected in favour of PLS-SEM for several reasons. According to Cheah et al. [66], PLS-SEM is suitable for studies

**Table 2**
Reliability and validity.

| Scale & items | Loadings | Composite reliability | AVE |
|---|---|---|---|
| Internal social media exposure | | .920 | .743 |
| ME1 The internal social media post brings up the message to go green at the office. | .911 | | |
| ME2 The internal social media post brings up the message to be environmentally sustainable at the office. | .886 | | |
| ME3 The internal social media post encourages me to maintain a green office for the future. | .845 | | |
| ME4 The internal social media post encourages me to uphold a sustainable office for the environment. | .800 | | |
| Self-efficacy | | .937 | .833 |
| SF1 I know how to take precautions to protect the environment in everyday life. | .909 | | |
| SF2 I can handle environmental problems, if I make an effort. | .912 | | |
| SF3 Whatever happens in terms of the environment, I will be able to handle it. | .918 | | |
| SF4 I don't worry much about difficulties, which may arise as a result of global environmental problems because I trust my ability to cope with them. | .937 | | |
| Employee green behavior | | .893 | .736 |
| GPI1 In future, I will consider purchasing durable equipment or supplies | .909 | | |
| GPI2 In future, I will consider reuse and recycle used papers and office materials. | .763 | | |
| GPI3 In future, I plan to turn off the electrical appliances to save energy when not in use. | .893 | | |

such as the studies under consideration that aim to evaluate multi-construct, multi-path complex research models without making strict data distribution assumptions. In addition, PLS-SEM is effective in forecasting important target constructs in research models [67]. PLS-SEM also is appropriate for exploratory research with a range of explanatory and predictive methods and has been utilized in previous studies on sustainability to carry out data analysis [68].

### 3.1.4. Common method bias (CMB)

To examine whether there is any CMB, Harman's single-factor test was employed using SPSS, and the results indicated that the variance explained by the fist factor was 29.23 % (less than 40 %), suggesting that there is no CMB [69].

### 3.1.5. Measurement model

The validity and reliability of the measurement model were evaluated. Composite reliability (CR) was used to evaluate the measurement items' dependability. The findings showed that all constructs' CR values were higher than the cutoff point of 0.70 recommended by Hair et al. [70] and that all measurement items' outer loadings were greater than 0.8 and significant (see Table 6). Convergent validity was evaluated using the average variance extracted (AVE), as shown in Table 2. The study model accomplished convergent validity because the AVE of each construct was greater than the threshold of 0.50 [70]. To test the discriminant validity, the Fornell-Larcker criterion ratio was employed [71]. As shown in Table 3, the Fornell-Larcker criterion ratio was below the cutoff of 0.90, confirming the discriminant validity of this study.

### 3.1.6. Structural model

By bootstrapping with 5000 samples, the statistical significance of the research model was evaluated [72]. A one-tailed test was used to accept a hypothesis when the t-values were higher than the critical value of 1.96 ($t = 1.96$, $p < .05$). H1 and H2 were examined using PLS-SEM path analysis to assess the structural model. Table 4 provides an overview of the findings for the tested hypotheses. Internal social media exposure is positively related to self-efficacy ($\beta = 0.443$, $p < 0.001$) supporting H1. Furthermore, self-efficacy mediates the relationship between internal social media exposure and EGB ($\beta = 0.675$, $p < 0.001$) supporting H2. The explanatory power of the research model was evaluated using the coefficients of determination, or $R^2$ values. The $R^2$ values were higher than the suggested criterion benchmark of 0.10 for self-efficacy ($R^2 = 0.409$) and EGB ($R^2 = 0.640$) [73]. The outcomes demonstrated that the research model's exogenous constructs adequately clarified the endogenous constructs. The effect sizes ($f^2$) internal social media exposure → EGB and internal social media exposure → Self-efficacy → EGB was calculated to be 0.112 and 0.115, respectively, indicating a medium effect using the rule of thumb of mediation analysis (i.e. 0.01 for small, 0.09 for medium and 0.25 for large effects) [74]. Additionally, the $Q^2$ values for these relationships were assessed to evaluate the predictive relevance of the model, ranging from 0.263 to 0.333, indicating a medium predictive relevance of the model [70]. The control variables (sex, gender, years of working experience) had no significant effect, as follows: sex: ($\beta = 0.009$, $t = 0.249$); age: ($\beta = 0.027$, $t = 0.744$); years of working experience: ($\beta = 0.006$, $t = 0.153$).

**Table 3**
Assessing discriminant validity (Fornell-Larcker criterion).

| Construct | Self-efficacy | EGB | Internal social media exposure |
|---|---|---|---|
| Self-efficacy | .913 | | |
| EGB | .795 | .858 | |
| Internal social media exposure | .640 | .584 | .862 |

**Table 4**
Summary of PLS-SEM path analysis.

| Path | Hypothesis | path coefficients | t-statistics | p-values | Supported? |
|---|---|---|---|---|---|
| Internal social media exposure → EGB | H1 | .443 | 6.912 | .000*** | Yes |
| Internal social media exposure → Self-efficacy → EGB | H2 | .675 | 10.871 | .000*** | Yes |

Mediation analysis (Internal social media exposure → Self-efficacy → EGB)

| Total effects | Direct effect | Indirect effect |
|---|---|---|
| $\beta = 0.505$; t-statistics = 10.871 | $\beta = 0.276$; t-statistics = 5.067 | $\beta = 0.229$; t-statistics = 4.969 |

*** $p < .001$.

### 3.2. Study 2

The experiment used a 2 (message type: gain vs loss) x 2 (construal level: concrete vs abstract) between-subjects analysis of variance (ANOVA). A sample size of 224 participants was calculated using a priori analysis to detect a medium effect size of $F = 0.25$ [75] and a power of $1 - \beta = 0.90$ using the program G*Power. The study followed ethical guidelines, including informed consent obtained from participants and approval from organizations. 224 employees aged 18 to 65 from two organizations were recruited for the experiment. The demographic characteristics are described in Table 5. All of the participants signed informed consent. The participants were randomly assigned to four groups with four conditions: internal social media post with gain-framed and concrete messages ($n = 70$), with loss-framed and concrete messages ($n = 54$), with gain-framed and abstract messages ($n = 48$), and with loss-framed and abstract messages ($n = 52$).

Internal social media post with gain-framed and concrete (drink clean water) (Appendix B), loss-framed and concrete (drink dirty water) (Appendix C), gain-framed and abstract (healthy polar bear) (Appendix D), and loss-framed and abstract (skinny polar bear) (Appendix E) messages were prepared as independent variables. Water represented a concrete construal level and a short psychological distance, whereas the polar bear represented an abstract construal level and a distant psychological gap. The positive impacts (healthy/clean) on the polar bear and water represented a gain-framed message. In contrast, negative impacts (unhealthy/dirty) on the polar bear and water represented a loss-framed message.

### 3.2.1. Measures

Manipulation check items for both message framing and construal

**Table 5**
Descriptive statistics of participants.

| | Research sample | |
|---|---|---|
| | N | % |
| Sex | | |
| Female | 40 | 17.9 % |
| Male | 184 | 82.1 % |
| Age | | |
| 18 to 45 | 46 | 20.5 % |
| 46 to 65 | 178 | 79.5 % |
| Years of working experience | | |
| 1 -5 years | 96 | 42.9 % |
| 6 -10 years | 72 | 32.1 % |
| Over 11 years | 56 | 25.0 % |

levels were included to test the effectiveness of the green messages on internal social media post. Then, the participants rated their level of self-efficacy through four statements on a 7-point Likert scale (1 = totally disagree to 7 = totally agree). The sample statement included, "I know how to take precautions to protect the environment in everyday life". Finally, the participants' EGB was measured through three statements on a 7-point Likert scale (1 = totally disagree to 7 = totally agree) [64].

### 3.2.2. Procedures

In the experiment, 224 participants were randomly assigned to one of the four experimental groups and attended the experiment. The experimenters introduced the purposes and procedures of the experiment. Then, the participants were given a maximum of 3–5 min to view the internal social media post; however, participants took less than 1 min to view the post. After that, the participants completed the survey on different scales. HK$50 coupons were offered as an incentive to the participants. A debriefing on the true aims of the data collection was held at the end.

## 4. Results

### 4.1. Manipulation check

Four manipulation check items were included at the beginning of the questionnaire to test the manipulations of message framing and construal levels. For the internal social media post with loss-framed and gain-framed messages, two manipulation check items were used, "according to the internal social media post, performing EGB will bring upon…" Two 7-point Likert scales ranging from "disadvantage" to "advantage" and "negative" to "positive," respectively, were used to rate the answers. The same two manipulation check items were used for construal levels, but the scales were different, ranging from "not close" to "close" and from "abstract" to "concrete." The results confirmed the intended effect of our manipulation for the four messages on internal social media posts. They confirmed the difference between loss-framed and gain-framed messages on the internal social media posts both in the first manipulation check item ($M = 6.63$, $SD = 0.30$; $t(223) = 131.57$, $p < .001$) and in the second item ($M = 6.55$, $SD = 0.42$; $t(223) = 91.67$, $p < .001$). The results also confirmed the difference between abstract construal levels and concrete construal levels on the internal social media posts in the first manipulation check item ($M = 5.44$, $SD = 1.67$; $t(223) = 13.01$, $p < .001$) and in the second item ($M = 5.41$, $SD = 1.67$; $t(223) = 12.62$, $p < .001$). In summary, the conditions of message framing and construal levels were manipulated.

### 4.2. Congruency between message framing and construal levels

A two-way ANOVA was conducted to examine whether self-efficacy differed between loss/gain message framing and construal levels. There was a significant interaction effect of internal social media posts with message framing and construal levels on self-efficacy ($F(3, 223) = 2.832$, $p < .05$; see Table 6 and Fig. 2). A small effect size was detected. As predicted, when loss-framed messages were delivered on the internal social media posts, the participants were more likely to enhance their self-efficacy in response to the concrete message ($M = 5.63$) than in response to the abstract message ($M = 5.02$) ($F(1, 104) = 7.34$, $p < .05$). However, when gain-framed messages were delivered, the participants did not show significantly different self-efficacy in response to the abstract message ($M = 5.12$) or the concrete message ($M = 0.22$) ($F(1, 116) = 0.22$, n.s.). Thus, H3 was supported.

### 4.3. Self-efficacy and EGB

A simple linear regression was performed to predict EGB based on self-efficacy, $b = 0.75$, $t(223) = 16.89$, $p < .001$. A significant regression result was obtained, $F(1, 223) = 285.09$, $p < .001$. Thus, H4 was supported.

**Table 6**
Two-way ANOVA results on dependent variables.

| Dependent Variable: Self-efficacy | | | | | |
|---|---|---|---|---|---|
| | SS | df | MS | F | Sig. |
| Corrected Model | 11.234 | 3 | 3.745 | 2.832 | .39 |
| Intercept | 6043.629 | 1 | 6043.629 | 4570.777 | .000*** |
| Message framing x construal level | 11.234 | 3 | 3.745 | 2.832 | .039* |
| Error | 290.891 | 220 | 1.322 | | |
| Total | 6476.125 | 224 | | | |
| Corrected Total | 302.125 | 223 | | | |

Abbreviations: SS, sum of squares; df, degree of freedom; MS, mean of squares; F, F-test; Sig., significance.
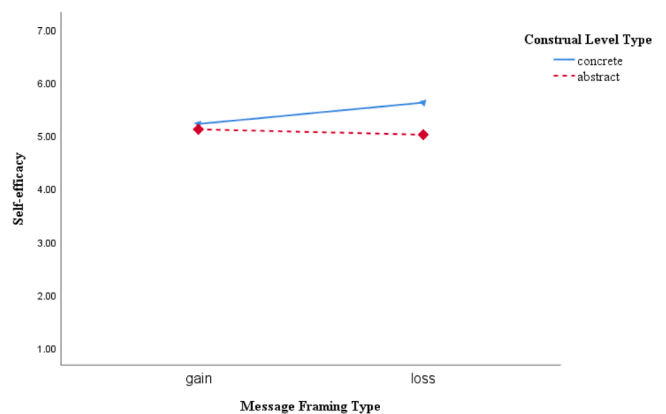* $p < .05$.
*** $p < .001$.



**Fig. 2.** Effect of two-way interaction effect among internal social media posts with message framing and construal levels on self-efficacy.

## 5. General discussion

This research examines the effectiveness of various green framed messages posted on internal social media in enhancing employees' self-efficacy and promoting EGB through two experiments. The first experiment tested the effectiveness of internal social media posts in encouraging employees' self-efficacy and EGB (Study 1). The second experiment investigated the interaction between message types (i.e. gain vs loss) and construal levels (i.e. construct vs abstract) in explaining employees' self-efficacy and EGB (Study 2).

Overall, the results in the study 1 indicated that internal social media exposure can generate self-efficacy and EGB. Study 2 further tested that internal social media green messages with the matched loss and concrete condition is the most effective among all four conditions in triggering self-efficacy and EGB. Specifically, employees may feel threatened and psychologically near with the loss of natural resources, they quickly develop the ability to conduct effective EGB [76]. Under the fast-paced working environment, employees may neglect the importance of working with EGB. It is essential for the organizations to adopt a top-down approach in bringing up the EGB in employees and create an environmentally sustainable workplace. Besides, employees may read and scroll through the messages posted in the company's internal social media posts. The internal social influence via internal social media posts may serve as a reminder and notice for the employees to commit EGB. Primarily, internal social media exposure overtook the daily life of the modern world. People would not leave a day without it. Although the generic post of the environmental message could already encourage self-efficacy and further generate EGB, this research also found that internal social media post that contained the loss and concrete environmental message is the most effective and significant message in generating self-efficacy and EGB.

While previous studies have focused on consumers' responses to green behavior [9,32,34] using message framing strategies, the present study shifts the focus to employees' responses to green behavior within the workplace context. The present study adopted prospect theory and CLT as the theoretical foundations for the independent variables [41] while using self-efficacy theory as the theoretical foundations for the dependent variables [77]. The results responded to the call from Farooq and Yusliza [78] that more investigations are required on how environmental messages affect personality traits and further influence EGB. The findings were also in line with the study by Grazzini et al. [38], demonstrating that a loss-framed message paired with a concrete message effectively induces pro-environmental behavior, especially EGB. We can conclude that our experimental studies support that environmental messages on organizations' internal social media post could generate self-efficacy and EGB while the interaction effect of loss and concrete message on internal social media post could predict employees' self-efficacy in promoting EGB. Moreover, our studies highlight the underlying mechanism of the interaction to frame internal social media post messages on encouraging EGB [38,79,80], especially in the context of employees, showing that self-efficacy was the essential factors for EGB.

### 5.1. Theoretical implications

This research contributes to the literature in several aspects, especially to the literature on green business promotion for employees [81]. First, the study integrate the perspectives of message framing and construal level theory to examine the effectiveness of internal social media posts in influencing EGB. It provides a comprehensive understanding of employees as target participants by empirically examining the interplay between message framing and construal levels through experiments investigating their self-efficacy. This research thus contributes to the literature on framing strategies for internal social media messages to induce higher self-efficacy in environmental message delivery, which could be applied to employee green promotion. Second, the results of this research confirm the findings of Kim and Kim [82] and Grazzini et al. [38] regarding the effect of different message types on self-efficacy, thus providing an effective strategy to promote internal social media green messages and induce employees' EGB. Third, while previous studies have acknowledged the importance of self-efficacy in shaping individuals' pro-environmental behaviors, limited research has specifically examined how self-efficacy interacts with the framing and content of environmental messages to influence pro-environmental actions within organizational settings; thus, the current research fills the study gap on self-efficacy as critical psychological attributes in the delivery of environmental messages to promote EGB [83]. The current study builds upon existing knowledge by applying message framing and construal level theories to the workplace context and incorporating self-efficacy as a key variable, this research provides a novel contribution to understanding how internal communication strategies can encourage sustainable behaviors among employees.

### 5.2. Managerial implications

The present research has managerial implications for experts, researchers, managers, and policymakers, who can effectively use framing strategies on internal social media to encourage employees to engage in EGB. ESG (environmental, internal social and governance) are the three pillars for organizations to report in to capture the non-financial risks and opportunities inherent in the daily operations. Beyond the external customers, organizations could conveniently start the environmental aspect by encouraging internal customers to perform EGB via internal social media. This study informs the marketing managers of the organizations to create novel framed internal social media posts to encourage employees to engage in EGB. The results demonstrated that the most effective communication strategy for delivering green messages on internal social media is to induce employees' self-efficacy. Social media messages could inspire employees who do not currently engage in EGB to take action and adopt green practices.

Businesses in Hong Kong are following the ESG guidelines to go green, thus they have to ensure that their policies and promotional strategies account for this factor to inspire employees to modify or change their intentions and behaviors [84]. Internal social media strategies should focus on enhancing employees' self-efficacy by providing clear, actionable steps and concrete examples of how their individual behaviors contribute to broader environmental goals. Although many resources and money have been deployed to promote green promotion, the effect could be more salient by starting with employees [85]. The environmental messages are delivered to employees, yet they may see themselves as incapable and non-urgent of performing EGB without self-efficacy. Therefore, managers and businesses should consider delivering appropriate internal social media green messages to employees. Specifically, they could use loss-framed and concrete messages in their internal social media posts.

### 5.3. Limitations

This research has several limitations. First, all the variables were self-reported. Future research could replicate the findings to examine employees' EGB by manipulating message framing and construal levels on internal social media. To protect the environment, the consistency of employees' self-efficacy and EGB are essential [86]. Second, although perceived values are based on employees' implanted mindset to create a long-term effect, actual pro-environmental behaviors could be further measured to confirm the effect of self-efficacy, which could be done, for instance, by measuring employees' recycling behavior one week and one month apart.

### 6. Conclusion

Internal customers who are committed to perform EGB can largely reduce waste and use of resources and is one of the major solutions to save and protect the earth in the future. In daily operation, employees may focus on efficacy and neglect the importance of going green. Effective environmental communication on internal social media is essential to prime and serve as a reminder to enhance their self-efficacy in performing EGB. Therefore, informing managers of businesses and researchers, this study demonstrated that message framing and construal level could be used effectively in the delivery of environmental messages to enhance self-efficacy and promote EGB of internal customers via internal social media.

### CRediT authorship contribution statement

**Peggy M.L. Ng:** Writing – original draft, Investigation, Funding acquisition, Conceptualization. **Tai Ming Wut:** Writing – review & editing. **Jason K.Y. Chan:** Writing – review & editing, Software, Methodology. **Mei Mei Lau:** Writing – review & editing. **Cherry T.Y. Cheung:** Validation, Formal analysis, Data curation. **Man Lung Jonathan Kwok:** Writing – review & editing. **Ellesmere T.K. Choy:** Writing – review & editing, Resources, Data curation.
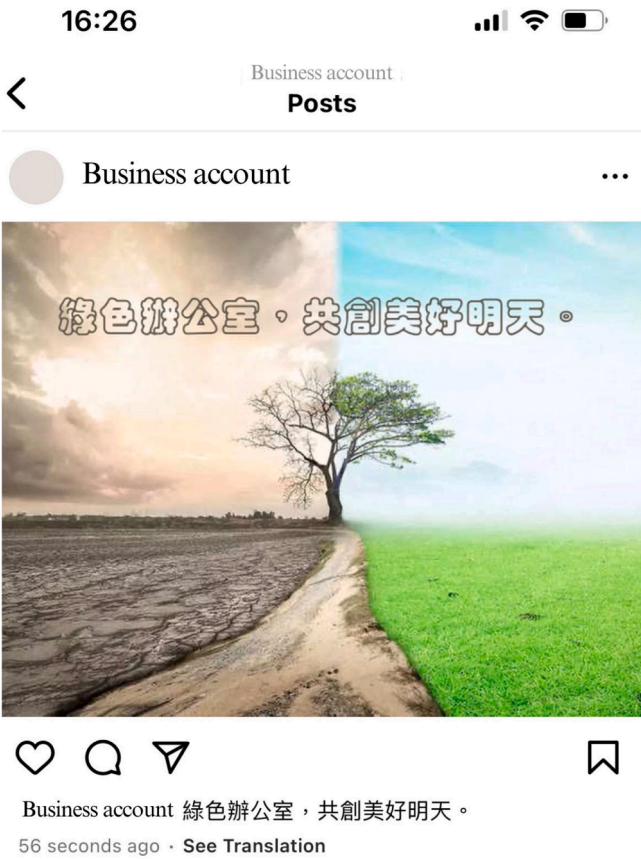
### Declaration of competing interest

None. All the authors have no conflict of interests nor any relationships with the Sustainable Futures.

### Funding

**Appendix A**



a)

**Appendix B**



Internal social media post with gain and concrete green message (clean water)
(By performing sustainable behaviors (reuse, recycling and energy conservation), you will save the world, you can continue to drink clean water.)

**Appendix C**



Internal social media post with loss and concrete green message (dirty water)

(By not performing sustainable behaviors (reuse, recycling and energy conservation), you will destroy the world, you can no longer drink clean water.)

**Appendix D**



Internal social media post with gain and abstract green message (healthy polar bear)

(By performing sustainable behaviors (reuse, recycling and energy conservation), you will save the earth, polar bears can continue to live and the temperature on earth will remain normal.)

**Appendix E**



如果不參與循環再用

♻️ 環保回收和節約能源

你便繼續破壞地球

北極熊將會絕種
地球溫度將會不斷上升

Business account

如果不參與循環再用，環保回收和節約能源，你便繼續破壞地球，北極熊將會絕種，地球溫度將會不斷上升。

24 minutes ago · See Translation

Internal social media post with loss and abstract green message (skinny polar bear)

(By performing sustainable behaviors (reuse, recycling and energy conservation), you will destroy the earth, polar bears will be extinct and the temperature on earth will remain normal.)

**Data availability**

Data will be made available on request.

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