Journal of Innovation & Knowledge

Regular article

The influence of product innovation messages on the intention to purchase incumbent products

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ARTICLE INFO

ABSTRACT

How do product innovation messages delay purchase intentions? Few studies offer answers to this question. Building on the literature of regulatory focus and framing effects, this study aims to identify the mechanism of the relationships among product innovation contents (i.e., performance advancements and price drops), reference time points (i.e., in the past and in the near future), and purchase intentions. Three experiments are conducted in the contexts of electric vehicles (Experiments 1 and 2) and household solar panels (Experiment 3) in South Korea in 2018 and 2019. The results indicate that when prevention-oriented individuals are exposed to prevention-focused messages, as compared to promotion-focused messages, their intentions to purchase incumbent products are weaker. However, promotion-oriented individuals do not exhibit such differences in their purchase intentions. Further, when exposed to promotion-focused messages, promotion-oriented participants have higher purchase intentions when the message is framed as a gain rather than a non-gain. However, when they are exposed to prevention-focused messages, prevention-oriented participants have lower purchase intentions when the message is framed as a loss rather than a non-loss. This study enables the theoretical understanding of how and why consumers respond differently to product innovation messages. It also sheds light on how marketers must strategically manage the messages about innovation outcomes.

Introduction

As new technologies diffuse and product lifecycles mature, the performance of new products improves while the price of existing products decreases (Schilling & Shankar, 2019). Consumers are often aware of these (expected) dynamics in product attributes (i.e., better performance and/or lower price) (Bridges, Yim, & Briesch, 1995; Lee & Trimi, 2018). Researchers (e.g., Holak, Lehmann, & Sultan, 1987; Boone, Lemonb, & Staelin, 2001; Boone, 2012) found that consumers exposed to product innovation messages are more likely to wait for new products than to purchase existing products. Interestingly, unlike the findings in prior studies, companies tend to strategically release information on both performance advancements and price drops, particularly in high-technology and innovation-based industries (Höflinger, Nagel, & Sandner, 2018). Hence, an important question is raised: "How do consumers respond to different product innovation messages, specifically, those related to performance advancements and price drops?" Few studies (e.g., Boone et al., 2001; Boone, 2012) answered this question effectively by offering systematic evidence and theoretical explanations.

To better understand consumers' purchasing and adoption of new (or incumbent) products, prior studies (e.g., Ashraf, Razzaque, & Thongpapanl, 2016; Hsu, Yu, & Chang, 2017; Pentina, Bailey, & Zhang, 2018; Fazeli, Shukla, & Perks, 2020) adopted regulatory focus theory. This theory explains individuals' strategic and motivational orientations in their goal pursuits, including promotion focus (characterized as approaching pleasure and gain) and prevention focus (characterized as preventing pain and loss) (Higgins, 1997). By emphasizing that an individual's regulatory focus is related to approaching advancement from (or avoiding deterioration of) the status quo, Scholer, Zou, Fujita, Stroessner, and Higgins (2010) and Hsu et al. (2017) found that promotion-oriented consumers are more likely to purchase and/or adopt (new) products as compared to prevention-oriented consumers. However, while focusing

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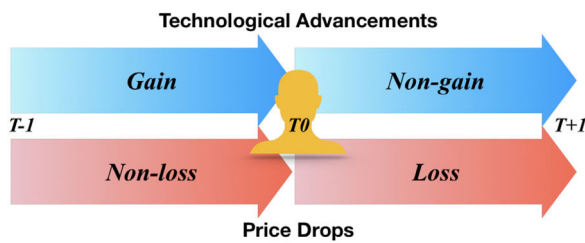
Fig. 1. Time-based (non-) gain and (non-) loss frames.

on the nature of consumers' regulatory focus, the prior studies were less likely to identify the different roles of product innovation characteristics—performance advancements and price drops.

We believe that these product innovation characteristics should be critically considered because an individual's regulatory focus can be formed from not only an outcome of their experiences with caregivers (namely *chronic regulatory focus*) but also as a result of their specific, current situation (namely *situationally induced regulatory focus*) (Camacho, Higgins, & Luger, 2003; Higgins, 1997). In addition, the regulatory fit between the abovementioned two types of regulatory focus can increase the perceived value of goal pursuits (Higgins, 2000) and purchasing behaviors (Chowdhury, Micu, Ratneshwar, & Kim, 2015; Higgins, Nakkawita, & Cornwell, 2020; Polonsky, Vocino, Grimmer, & Miles, 2014). Further, the product innovation characteristics can cause framing effects, that is, different descriptions of identical decision problems can lead to different outcomes (Tversky & Kahneman, 1981). Although several studies found that individuals' purchasing behaviors depend on whether messages are framed as not only gain and loss, but also non-gain and non-loss (Florack, Keller, & Palcu, 2013; Lee & Aaker, 2004; Zou & Chan, 2019), literature on product innovation messages (e.g., Bridges et al., 1995; Boone et al., 2001; Boone, 2012) dichotomized the buying of new (or existing) products as gain or loss. They did not consider how consumers differently consider product innovation framed as non-gain and/or non-loss.

While addressing the above limitations, this study demonstrates how an individual's regulatory fit and message framing may differently affect their purchase intentions in the product innovation context. That is, we consider that performance advancement and price drop messages may both situationally induce regulatory focus and act as frames. Specifically, individuals may perceive messages pertaining to performance advancements as positive outcomes they need to achieve (i.e., gain-framed messages) and those related to price drops as negative outcomes they need to avoid (i.e., loss-framed messages; Brendl, Higgins, & Lemm, 1995; Lee & Aaker, 2004). Therefore, we expect that a fit between chronic and situationally induced regulatory focus—that is, individuals' promotion- (or prevention-) orientations and promotion- (or prevention-) focused messages—may affect purchase intentions with message-framing possibly influencing this effect.

We conducted three experiments in the context of two products: electric vehicles (Experiments 1 and 2) and household solar panels (Experiment 3). These products were being widely spread in South Korea in 2018 and 2019. We selected these two products to minimize the effect of users' experience with products (Clement, Jiaming, & Li, 2020) or their brand preferences (Ebrahim, Ghoneim, Irani, & Fan, 2016), thereby isolating the effects of regulatory fit and message-framing. In the first experiment, following prior studies (e.g., Aaker & Lee, 2006; Song & Morton, 2016), we developed messages inducing regulatory focus; thereafter, we investigated the interaction effects between chronic and situationally induced regulatory focus on purchase decisions. In the second experiment, by manipulating the reference time points (see Fig. 1), we further differentiated messages framed as gain (and non-gain) and loss (and

non-loss) (e.g., Sacchi & Stanca, 2014; Zou & Chan, 2019): (1) performance advancements and price drops from the present to the future ($T_0 \rightarrow T_1$) as non-gain and loss and (2) performance advancements and price drops from the past to the present ($T_{-1} \rightarrow T_0$) as gain and non-loss. Then, we examined the three-way interaction effects (chronic regulatory focus X situationally induced regulatory focus X reference time points) on purchase intentions, while controlling for the effect of present focus. The third experiment replicates the second one, while controlling for an additional factor—uncertainty avoidance—in the different product domains.

The results consistently indicate that promotion-oriented individuals (those with a higher chronic promotion focus than prevention focus) do not exhibit differences in their intentions to purchase incumbent products when exposed to the two types of messages, while prevention-oriented individuals (those with a higher chronic prevention focus than promotion focus) have lower purchase intentions when exposed to prevention-focused (price drop) messages compared to promotion-focused (performance advancement) messages. Furthermore, promotion-oriented participants show higher purchase intentions when exposed to promotion-focused (performance advancement) messages that are framed as gains rather than non-gains. In contrast, prevention-oriented participants show lower purchase intentions when exposed to prevention-focused (price drop) messages that are framed as losses rather than as non-losses.

This study makes several contributions to the literature. First, it is one of the few studies to investigate how consumers may differ in their understanding of product innovation information—performance advancements and price drops—and explain how such understanding influences purchase decisions. Thus, this study can help understand consumer behaviors in the context of product innovation messages. Second, we differentiate between gain/non-gain and loss/non-loss framing, offering empirical evidence supporting the distinction between the operationalizations of message contents based on reference time points, thereby adding to the literature on regulatory fit mechanisms. This study can address the call for "a fuller picture regarding gains and losses" (Idson, Liberman, & Higgins, 2000 p. 253) in the context of product innovation. More specifically, we identified how message frames can accentuate the effect of regulatory fit, rather than showing that regulatory focus tends to shift individuals' attention to message contents and mitigates framing effects, as prior studies have done (e.g., Mogilner, Aaker, & Pennington, 2007; Joireman, Shaffer, Balliet, & Strathman, 2012). For practitioners, our results can help organizations and marketers strategically manage their product innovation messages when introducing new products and technologies.

The rest of this paper is organized as follows. In the next section, we present the theoretical background of our research by drawing from the literature on regulatory focus theory and framing effects. Based on this, we specify our hypotheses related to regulatory fit and message framing with purchase intentions. We then explain the procedure for the three experiments and data analyses and, thereafter, present the results. Finally, we provide our findings, implications for future research and practice, and the limitations of the study.

Theoretical background and hypotheses

Product innovation messages can influence individuals' purchasing decisions (Cripps & Meyer, 1994). As messages can raise consumers' expectations about higher performance and/or lower prices in the near future, consumers tend to postpone their decisions to buy incumbent products to reduce the likelihood of regrets (Boone et al., 2001; Boone, 2012). Similarly, Rogers (1995) stated

that relative advantage—referring to the perceived superiority of new products over existing products with regard to improved performance and lower costs—is one of the key characteristics that can expedite the diffusion of new product innovations, which could reduce the demand for existing products. Cripps and Meyer (1994) stated that, for product replacement decisions, consumers tend to compare the performance lag between existing and future products with expected gains from buying future products. Holak et al. (1987) identified that as consumers expect higher levels of performance advancements, they are more likely to postpone the purchasing of incumbent products.

Despite their contributions to understanding consumer behaviors, the above studies may commonly consider that performance advancements and price drops of new products create (dis)advantages for consumers facing the purchase decision. That is, they may not have considered that the messages encompassing performance advancements and price drops can be framed differently, for example, gain versus non-gain and loss versus non-loss. Thus, we adopted regulatory focus theory and reviewed framing effects to provide more nuanced explanations about the relationships between product innovation characteristics and purchase decisions.

Regulatory focus theory

Regulatory focus refers to individuals' specific strategic and motivational orientations in their goal pursuits (Higgins, 1997; Pham & Chang, 2010). Individuals tend to have different goal-pursuit strategies—namely promotion focus (i.e., approaching pleasure) and prevention focus (i.e., avoiding pain)—and exhibit different behavioral patterns (Higgins, 1997). For instance, promotion-oriented individuals are likely to have the goal of reaching desired end-states (Higgins, 1997). They are more willing to seek positive results and take risks to achieve desired outcomes (Crowe & Higgins, 1997). However, prevention-oriented individuals are more likely to avoid undesirable outcomes and eliminate negative consequences (Higgins, 1997), thereby ensuring correct rejection and avoiding false alarms (Crowe & Higgins, 1997). Regulatory focus is chronically formed as an outcome of the individuals' experiences with caregivers, that is, chronic regulatory focus, and also induced by situational cues, that is, situationally induced regulatory focus (Camacho et al., 2003; Higgins, 1997).

Messages including gain- and loss-related information can temporarily induce promotion or prevention focus (Higgins, 1997; Jain, Lindsey, Agrawal, & Maheswaran, 2007; Lee & Aaker, 2004). Therefore, product attributes in conjunction with regulatory focus can account for individuals' sensitivity to gain and loss (e.g., Halamish, Liberman, Higgins, & Idson, 2008; Scholer et al., 2010). Drawing on regulatory fit and highlighting the congruence between a person's self-regulatory orientation and goal pursuit strategies (2000, Higgins, 1997), studies identified that promotion-oriented individuals are more likely to adopt approach-oriented means, that is, messages framed with respect to achievement and gain, while prevention-oriented individuals are more likely to accept avoidance-oriented means, that is messages framed with respect to caution and loss (Higgins et al., 2020). Additionally, studies highlighted the importance of regulatory fit between individuals' goals and messages in their information processing. For instance, individuals tend to perceive messages as more persuasive and therefore, pay more attention to them when their regulatory orientations fit the messages (e.g., Pentina et al., 2018; Polonsky et al., 2014; Chowdhury et al., 2015; Fazeli et al., 2020). This fit also contributes to increasing individuals' perceptions of a decision being "right" (Ashraf et al., 2016; Lin & Shen, 2012; Song & Morton, 2016; Yoon, Sarial-Abi, & Gürhan-Canli, 2012) and their willingness to pay more

for a product (Herzenstein, Posavac, & Brakus, 2007; Higgins, Idson, Freitas, Spiegel, & Molden, 2003).

Considering the literature on the impact of regulatory fit on new product purchasing behaviors (e.g., Yoon et al., 2012; Chowdhury et al., 2015; Ashraf et al., 2016; Higgins et al., 2020), we argue that messages about performance advancements and price drops may temporarily induce promotion and prevention focus, respectively. Further, promotion-oriented individuals may be more sensitive to performance advancement messages that situationally induce promotion focus, while prevention-oriented individuals may be more sensitive to price drop messages that situationally induce prevention focus. As consumers' expectations about new products, that is, higher performance and/or lower price in the near future, can decrease their purchase intentions (Boone, 2012; Holak et al., 1987), innovation messages that can shape these expectations may reduce the intention to buy incumbent products. In this situation, due to their regulatory fit, a promotion-oriented consumer will have lower intentions to buy existing products after being exposed to messages describing performance advancements in the near future compared to those describing price drops in the near future; prevention-oriented consumers may show an opposite pattern. Therefore, we posit the following:

Hypothesis 1. The regulatory fit between chronic regulatory focus and situationally induced regulatory focus may influence purchase intentions. More specifically,

Hypothesis 1a. A promotion-oriented individual is likely to have a lower purchase intention in the presence of a promotion-focused (performance advancement) message as compared to a prevention-focused (price drop) one.

Hypothesis 1b. A prevention-oriented individual is likely to have a lower purchase intention in the presence of a prevention-focused (price drop) message, as compared to a promotion-focused (performance advancement) one.

Framing effects

The framing effect refers to how individuals' choices depend on their focus on the potential gain or loss associated with an alternative when making decisions in the presence of uncertainty (Levin, Schneider, & Gaeth, 1998). Messages can be framed by focusing on the gain or loss that can occur from purchasing a product (Lin & Shen, 2012). Additionally, buying existing products tend to be understood as gain or loss by comparing them with expected (new) products (Bridges et al., 1995). Particularly, consumers tend to use the current prices of products as reference and therefore, recognize information about price drops in the future as loss (Chang & Wildt, 1994). If so, even if consumers receive information about similar levels of performance advancements, they may perceive gains from buying incumbent products if the message describes that performance has been improved compared to the past ($T_{-1} \rightarrow T_0$), but perceive non-gains if the message explains that performance will be improved in the future ($T_0 \rightarrow T_1$). Similarly, based on reference time points, consumers may understand price drops as either loss ($T_0 \rightarrow T_1$) or non-loss ($T_{-1} \rightarrow T_0$).

Integrating framing effects into the regulatory focus framework is important in that the loss frame tends to be more effective as consumers may be more influenced by price than technological features, as some features may not be fully understood (Block & Keller, 1995). That is, regulatory fit alone may be limited in its attempt to identify the impact of innovation contents on purchase decisions. Furthermore, researchers (e.g., Aaker & Lee, 2006; Florack et al., 2013; Zou & Chan, 2019) stated the differences in individuals' responses to not only gain and loss (i.e., presence of positive and negative results, respectively), but also non-gain and non-

loss (i.e., absence of positive and negative results, respectively). More specifically, several studies (Idson et al., 2000; Liberman, Idson, & Higgins, 2005; Sacchi & Stanca, 2014) identified that promotion- (prevention-) oriented individuals perceive gain (loss) more intensely than non-gain (non-loss).

As previously discussed, individuals with chronic promotion focus are sensitive to the presence or absence of positive outcomes due to their regulatory fit (Higgins, 1997). Therefore, promotion-oriented individuals exhibit higher levels of purchase intention when they are exposed to promotion-focused messages framed as gain rather than non-gain, while this difference may not occur for prevention-oriented individuals due to the lack of fit to the message (Liberman et al., 2005; Sacchi & Stanca, 2014). Conversely, prevention-oriented individuals are sensitive to the presence of negative outcomes (Higgins, 1997) and have lower levels of purchase intention when exposed to prevention-focused messages framed as loss rather than non-loss. However, this difference may not exist for promotion-oriented individuals. Therefore, we posit:

Hypothesis 2. The effects of regulatory fit on purchase intentions may depend on message frames. More specifically,

Hypothesis 2a. A promotion-oriented individual may show higher levels of purchase intention when exposed to a promotion-focused message framed as gain rather than non-gain.

Hypothesis 2b. A prevention-oriented individual may show lower levels of purchase intention when exposed to a prevention-focused message framed as loss rather than non-loss.

Individuals' intentions to buy existing products are related to their temporal focus, that is: past, present, and future focuses (He, Chen, & Alden, 2016; Roy & Naidoo, 2021). Therefore, the consideration of temporal focus may be particularly important in this research context, because individuals' perceptions of gain (loss) versus non-gain (non-loss) can be contingent on when performance advancements (price drops) occur. Furthermore, promotion-oriented individuals tend to emphasize future outcomes, while prevention-oriented individuals tend to emphasize immediate consequences (e.g., Mogilner et al., 2007; Joireman et al., 2012). In this context, among the three types of temporal focus, a present focus may lead individuals to focus more on innovation outcomes that are occurring now but discount the value of innovation outcomes that will occur in the future. Thus, we included present focus as a covariate while identifying the roles of regulatory fit and framing in Experiments 2 and 3.

Additionally, studies (e.g., Herzenstein et al., 2007; Castaño, Sujan, Kacker, & Sujan, 2008; Leonidou, Kvasova, Christodoulides, & Tokar, 2019) have identified that product newness can increase consumers' perceptions of risk and uncertainty about the product. Uncertainty avoidance—referring to the extent to which individuals perceive anxiety and risk when they encounter uncertain and ambiguous situations—can influence gain and loss perceptions (Hilary & Hui, 2009) as well as the effect of message framing on persuasiveness (Zeng & Hao, 2016; Ketelaar, Van't Riet, Thorbjornsen, & Buijzen, 2018). Thus, we expect that individuals with higher uncertainty avoidance are more likely to discount the values of performance advancements and price drops that will occur in the future. Hence, we control for uncertainty avoidance while examining the roles of regulatory fit and framing effects in Experiment 3.

Methods

Overview of experiments

We conducted three experiments from 2018 to 2019 to test the hypotheses discussed in the previous section. Experiment 1 aims

to identify the influences of regulatory fit on a consumer's intention to purchase an incumbent product when exposed to messages containing different product innovation outcomes (performance advancements versus price drops) (e.g., Aaker & Lee, 2006; Song & Morton, 2016). If regulatory fit effects are identified, Experiment 2 aims to identify the message framing effects that can be included in the regulatory fit effects, while differentiating between gain (loss) and non-gain (non-loss) (e.g., Sacchi & Stanca, 2014; Zou & Chan, 2019) after controlling for present focus, which can inflate (discount) the value of gain (loss) (He et al., 2016; Roy & Naidoo, 2021). The purpose of Experiment 3 is to identify whether the results of the previous two experiments persist in other product domain after controlling for the effect of uncertainty avoidance (e.g., Herzenstein et al., 2007; Castaño et al., 2008; Leonidou et al., 2019).

We selected electric vehicles (Experiments 1 and 2) and household solar panel systems (Experiment 3) as our focal products. At the time of conducting the experiments, these products were receiving increased attention; their technological efficiencies were increasing but their prices were decreasing. Although these products were not entirely relevant to the study participants, we intentionally selected the products to minimize the influences of other covariates, that is, experience with products (Clement et al., 2020) and brand preferences (Ebrahim et al., 2016), while maximizing the influences of focal research constructs. Specifically, unlike smartphones or portable gaming devices, the participants may not have had product involvement in, or preferences for, specific brands in the domains of electric vehicles and household solar panel systems, though they have known for the products. Thus, the participants could make decisions based primarily on price and technological features. Hence, we were able to identify the effects of message framing and regulatory fit on purchase decisions more effectively.

Procedure

Message development

In Experiment 1, by referencing actual news articles, we developed two different messages for electric vehicles, one describing performance advancements and the other describing price drops. To avoid message-length bias, the two messages had similar word counts: 164 Korean words for a performance advancement message and 169 for a price drop one. Appendix 1 includes the translated messages.

In Experiment 2, we developed four different messages in the context of electric vehicles: two for product advancements and two for price drops. As with Experiment 1, each message was written with reference to actual news articles. The two product-advancement messages highlighted performance advancements of approximately 300 km (per single charge) from the past to the present and from the present to the future to represent gain and non-gain frames, respectively. The two price-drop messages highlighted price drops of approximately $ 300 from the past to the present and from the present to the future to represent non-loss and loss frames, respectively. Except for the differences regarding innovation contents and reference time points, the other contents were identical among the four messages. To avoid message-length bias, the four messages had similar lengths. In the performance advancement case, the word count of the gain message was 98 and that of the non-gain message was 104. In the price drop case, the word count of the non-loss message was 91 and that of the loss message was 99. The messages used in Experiment 2 were translated and are presented in Appendix 2.

In Experiment 3, we developed four different messages in the context of household solar panel systems: two for product advancements and two for price drops. The two product-advancement messages highlighted around 30% performance advancements (km

per single charge) from the past to the present and from the present to the future to represent gain and non-gain frames, respectively. The price drop messages highlighted price drops of around 30% from the past to the present and from the present to the future to represent non-loss and loss frames, respectively. As with the previous two experiments, the messages were written with reference to actual news articles. The four messages were of similar lengths, thereby minimizing message-length bias: gain (137 words), non-gain (142 words), loss (133 words), and non-loss (139 words). The messages used in Experiment 3 are shown in Appendix 3.

Experimental design

In Experiment 1, we used a 2 (chronic regulatory focus: promotion versus prevention focus) X 2 (situationally induced regulatory focus: promotion- versus prevention-focused messages) between-subjects design. In Experiments 2 and 3, we used a 2 (chronic regulatory focus: promotion versus prevention orientations) X 2 (situationally induced regulatory focus: promotion- versus prevention-focused messages) X 2 (reference time points: past to present versus present to future) between-subjects design.

The participants of Experiments 1, 2, and 3 were 71 business school students in Seoul Metropolitan Areas, South Korea, in 2018; 206 members from the Energy Consumer Association (ECA) in 2018; and 225 business school undergraduate and graduate students in Seoul and Incheon, in 2019, respectively.[1] As a participant's interest in sustainable energy may influence their responses, the responses from the ECA members, who have high levels of interest in environmental sustainability, may reduce this extraneous effect on the results (Park & Lee, 2016), which can, in turn, increase the generalizability of the results. We also believe that as the participants in Experiments 1 and 3 constitute a convenient sample, responses from the ECA members can help enhance the validity of the results. The ECA held a quarterly conference in South Korea in 2018, where all members in South Korea gathered. One of the authors contacted the association to solicit the participation of their members, for which permission was granted.

In the three experiments, we randomly distributed booklets that included the messages, along with corresponding questionnaires, to the participants. Before reading the messages, participants rated their current moods and responded to a set of chronic regulatory focus, present focus (Experiment 2 and 3), and uncertainty avoidance (Experiment 3) questions. Then, they read the messages about performance advancements or price drops. After reading the messages, we asked the participants to indicate their intentions to purchase electric vehicles (Experiment 1 and 2) or household solar panel systems (Experiment 3) that were being sold in the Korean market. In addition, they were asked to respond to demographic questions (e.g., gender, monthly disposable income, and age). Finally, they were debriefed and thanked for their participation.

Measures

All the measures employed in this study were adopted from prior studies. Appendix 4 shows the items used in this study.

Regulatory focus orientation

We measured the participants' chronic regulatory focus using Haws, Dholakia, and Bearden (2010)) seven-point Likert scale. This measure is a modified version of the regulatory focus questionnaire (Higgins et al., 2001) in the marketing context. In Experiment

1, the participants' mean promotion focus score was 5.73 (sd = 0.72, α = 0.76) and their mean prevention focus score was 5.13 (sd = 0.95, α = 0.70). In Experiment 2, the participants' mean promotion focus score was 5.02 (sd = 1.06, α = 0.79) and their mean prevention focus score was 4.95 (sd = 1.05, α = 0.76). In Experiment 3, the participants' mean promotion focus score was 4.82 (sd = 0.99, α = 0.79) and their mean prevention focus score was 4.79 (sd = 0.88, α = 0.72). We considered those participants with a chronic promotion focus score higher than their chronic prevention focus score as promotion-oriented individuals and coded as 1 (n = 40 in Experiment 1, 103 in Experiment 2, and 120 in Experiment 3).[2] We considered those participants with a chronic prevention focus score higher than their promotion focus score as prevention-oriented individuals and coded as 0 (n = 29 in Experiment 1, 93 in Experiment 2, and 92 in Experiment 3).

Situationally induced regulatory focus

We manipulated this measure based on the message contents in the three experiments (e.g., Lee & Aaker, 2004). Participants exposed to a performance-advancement message were coded as 1 (n = 32 in Experiment 1, 103 in Experiment 2, and 112 in Experiment 3), representing the situationally promotion-focused group, and those exposed to a price drop message were coded as 0 (n = 37 in Experiment 1, 93 in Experiment 2, and 100 in Experiment 3), representing the situationally prevention-focused group.

Reference time points

In Experiments 2 and 3, participants exposed to the messages describing innovation outcomes from the past to the present were coded as 0 and from the present to the future as 1. In doing so, we manipulated the gain/non-gain (and non-loss/loss) frames based on comparisons of the current products' performances (prices) with the reference time points (i.e., those of the past and future).

Purchase intention

In Experiments 1 and 2, we measured purchase intention by directly asking participants how likely they are to buy an electric vehicle, in the near future, with the following specifications: total power = 88 Kw (120 ps), maximum torque = 295 Nm, and real range = 200 Km in averages condition. The responses were measured on a 7-point Likert scale from very unlikely (1) to very likely (7) (mean = 4.21, sd = 1.78 in Experiment 1 and mean = 4.26, sd = 1.59 in Experiment 2). In Experiment 3, we asked the participants to indicate their intentions to buy a household solar panel system, in the near future, with the following specifications: maximum capacity = 440 W, maximum voltage = 18.3, operating temperature range = −20 50 °C, and price = 7.15 Million Korean Won). We used a single item with a 7-point Likert scale from very unlikely (1) to very likely (7) (mean = 4.22, sd = 1.61). In all three experiments, we asked the participants to assume that they have the financial ability to purchase the products.

Covariates

Prior studies (e.g., Crowe & Higgins, 1997; Avnet & Higgins, 2006) found that consumers' moods can affect purchase intentions. We adapted the Consumption Emotion Descriptors by Richins (1997) to measure participants' positive moods and thereafter, controlled for their effects. Using ANOVA, we identified no sig-

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[1] Initially, we collected responses from 74, 213, and 231 participants in Experiments 1, 2 and 3, respectively. However, we deleted a few responses in each experiment as they were not properly completed.

[2] We excluded the responses from the participants with the same chronic promotion and prevention focus scores in the subsequent analyses (n = 2 in Experiment 1, 10 in Experiment 2, and 13 in Experiment 3). The sample sizes mentioned in this manuscript refer to those *after* removing these participants.

Table 1
Results of Experiment 1.

ANOVA results				
	Df	Sum of square	Mean of square	F-value
Chronic regulatory focus (CRF)	1	1.95	1.95	0.69
Situationally induced regulatory focus (SIRF)	1	8.30	8.30	3.35 †
CRF X SIRF	1	34.88	34.88	13.73 ***
Residuals	65	165.17	2.541	
Planned contrasts				
For promotion-oriented individuals				
Performance advancements (n = 19)		Price drops (n = 21)		
Mean = 4.11 (sd = 1.87)		Mean = 4.62 (sd = 1.62)		
t = 0.93, p = 0.36				
For prevention-oriented individuals				
Performance advancements (n = 13)		Price drops (n = 16)		
Mean = 5.34 (sd = 1.36)		Mean = 2.97 (sd = 1.36)		
t = 4.68, p < 0.01				

† p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.

nificant effects of mood.[3] We also controlled for the effects of gender (n_{male} = 36 and n_{female} = 33 in Experiment 1, n_{male} = 89 and n_{female} = 107 in Experiment 2, and n_{male} = 128 and n_{female} = 84 in Experiment 3) (Trivedi & Teichert, 2019); disposable income (De Silva et al., 2021); monthly family expenses; and age (Zhao, Geng, Liu, Tao, & Xue, 2018). However, they did not influence purchase intentions, and therefore were not included in the subsequent analysis.[4]

As discussed earlier, we controlled for the effects of present focus in Experiments 2 and 3 and uncertainty avoidance in Experiment 3. In Experiments 2 and 3, we measured participants' present focus using a 7-point Likert scale developed by Shipp, Edwards, and Lambert (2009)) (mean = 5.03, sd = 1.13, α = 0.87 in Experiment 2; mean = 5.06, sd = 1.12, α = 0.88 in Experiment 3). In Experiment 3, we measured uncertainty avoidance using a 7-point Likert scale (mean = 5.01, sd = 1.02, α = 0.83) following Jung and Kellaris (2004).
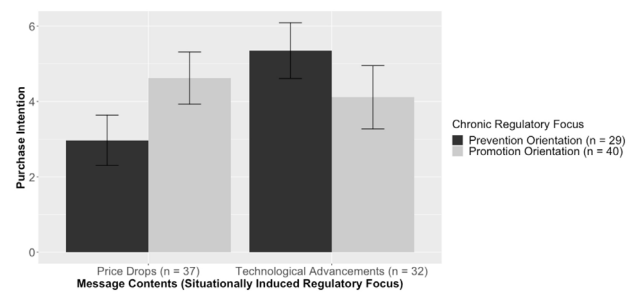
Results

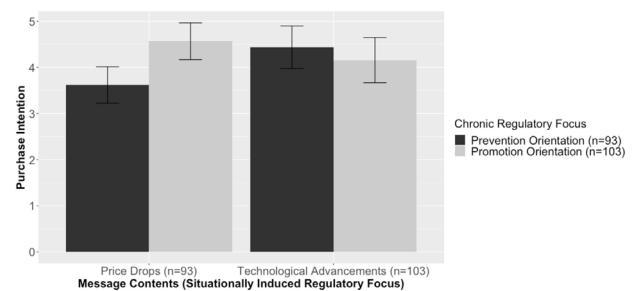### Result and discussion of experiment 1

Result

A two-way ANOVA was conducted on participants' purchase intentions. Table 1 shows the results of Experiment 1. The main effect of situationally induced regulatory focus was marginally significant ($F(1, 65) = 3.35$, $p < 0.1$). However, the effect of chronic regulatory focus was not ($F(1, 65) = 0.69$). As per Hypothesis 1, the interaction between chronic and situationally induced regulatory focus was significant ($F(1, 65) = 13.73$, $p < 0.001$). As shown in Fig. 2, follow-up planned contrasts indicated that prevention-oriented individuals had lower purchase intentions when exposed to prevention-focused messages (mean = 2.97, sd = 1.36) compared to promotion-focused messages (mean = 5.34, sd = 1.36) (t = 4.68, p < 0.01). However, promotion-oriented individuals did not show a significant difference between the two types of messages (t = 0.93, p = 0.36). These results support H1b but not H1a.

Fig. 2. Results of Experiment 1: planned contrasts.

Fig. 3. Results of Experiment 2: planned contrasts.

Discussion

The results of Experiment 1 provide partial support for H1. Consistent with the regulatory fit principle (Avnet & Higgins, 2006; Chowdhury et al., 2015; Higgins et al., 2020), as prevention-oriented individuals are more sensitive to prevention-focused messages (in this case price drop messages), they show lower purchase intentions for current products. However, promotion-oriented individuals do not show different levels of purchase intentions between promotion- and prevention-focused messages. That is, a message is more selectively effective when the prevention-focused outcome of the message is compatible with individuals' chronic prevention orientation.

Result and discussion of experiment 2

Result

Table 2 shows the results. A two-way ANOVA indicated that the interaction between chronic and situationally induced regulatory focus was significant—$F(1, 193) = 7.21$, $p < 0.001$—but the main effects of these two variables were not. As shown in Fig. 3, follow-up planned contrasts show that prevention-oriented indi-

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[3] $F(1, 50) = 0.01$ in Experiment 1, $F(1, 179) = 0.01$ in Experiment 2, and $F(1, 191)$ = 0.24 in Experiment 3.

[4] In Experiment 1, $F(1, 50) = 0.02$ for gender, $F(1, 50) = 0.57$ for disposable income, $F(1, 50) = 0.58$ for monthly family expenses, and $F(1, 50) = 1.24$ for age. In Experiment 2, $F(1, 180) = 0.36$ for gender, $F(5, 180) = 1.55$ for monthly family expense, $F(5, 180) = 0.27$ for disposable income, and $F(5, 180) = 0.93$ for age. In Experiment 3, $F(1, 191) = 0.44$ for gender, $F(5, 191) = 1.09$ for monthly family expense, $F(5, 191) = 0.90$ for disposable income, and $F(5, 191) = 0.21$ for age.

Table 2
Results of Experiment 2.

ANOVA results				
	Df	Sum of square	Mean of square	F-value
Chronic regulatory focus (CRF)	1	4.10	4.08	1.61
Situationally induced regulatory focus (SIRF)	1	1.30	1.30	0.51
CRF X SIRF	1	18.30	18.26	7.21***
Residuals	193	489.20	2.53	

ANCOVA results				
	Df	Sum of square	Mean of square	F-value
CRF	1	4.08	4.08	1.98
SIRF	1	1.30	1.30	0.63
Reference time points (RTP)	1	43.79	43.79	21.22 ***
Present Focus	1	5.65	5.65	2.74 †
CRF X SIRF	1	19.29	19.29	9.35 **
CRF X RTP	1	5.95	5.96	2.89 †
SIRF X RTP	1	4.33	4.33	2.10
CRF X SIRF X RTP	1	40.46	40.46	19.60 ***
Residuals	188	387.95	2.06	

Planned contrasts

For promotion-oriented individuals

Performance Advancements (n = 49)		Price Drops (n = 54)	
Gain (n = 24)	Non-gain (n = 25)	Non-loss (n = 28)	Loss (n = 26)
Mean = 5.42 (sd = 1.10)	Mean = 2.96 (sd = 1.38)	Mean = 4.66 (sd = 1.58)	Mean = 4.48 (sd = 1.79)
t = 6.92, p < 0.001		t = 0.44, p > 0.1	

For prevention-oriented individuals

Performance Advancements (n = 54)		Price Drops (n = 39)	
Gain (n = 28)	Non-gain (n = 26)	Non-loss (n = 17)	Loss (n = 22)
Mean = 4.39 (sd = 1.70)	Mean = 4.48 (sd = 1.79)	Mean = 4.41 (sd = 1.20)	Mean = 3.00 (sd = 0.93)
t = 0.18, p > 0.1		t = 4.01, p < 0.001	

† p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.

viduals had statistically lower purchase intentions when exposed to prevention-focused messages (mean = 3.61, sd = 1.26) compared to promotion-focused messages (mean = 4.44, sd = 1.73) (t = 2.64, p < 0.01). However, promotion-oriented individuals did not exhibit this difference in their purchase intentions between the two types of messages. These results are identical to those of Experiment 1.

To examine Hypothesis 2, a 2 (promotion versus prevention orientations) X 2 (situationally-induced promotion versus prevention focuses) X 2 (reference time points: from the past to the present versus from the present to the future) ANCOVA was performed while controlling for the effect of present focus. As shown in Table 2, present focus had a marginally positive relationship with purchase intentions—F(1, 188) = 2.74, p < 0.1. Among the main effects, the reference time points had a significant effect on purchase intention, F(1, 188) = 21.22, p < 0.001, but neither chronic nor situationally induced regulatory focus exerted significant influences. Among the two-way interaction effects, chronic regulatory focus X reference time points, F(1, 188) = 2.89, p < 0.1, and chronic regulatory focus X situationally induced regulatory focus, F(1, 188) = 9.35, p < 0.01, had significant effects on the dependent variable. The three-way interaction effect (chronic regulatory focus X situationally induced regulatory focus X reference time points) was significant—F(1, 188) = 19.60, p < 0.001.

As shown in Table 2, when exposed to promotion-focused messages, prevention-oriented participants did not show statistically significant differences in their purchase intentions between the reference time points that represent gain and non-gain situations (t = 0.18). When exposed to a prevention-focused message, promotion-oriented participants did not show statistically significant differences in their purchase intentions between the reference time points that represent loss and non-loss situations (t = 0.44). However, prevention-oriented participants had significantly lower purchase intentions (t = 4.01, p < 0.001) when exposed to prevention-focused messages about the price drops from the present to the future (loss frame: mean = 3.00, sd = 0.93) com-

pared to those from the past to the present (non-loss frame: mean = 4.41, sd = 1.20). Similarly, promotion-oriented participants had significantly higher purchase intentions (t = 6.92, p < 0.001) when exposed to the promotion-focused messages about the performance advancement from the past to the present (gain frame: mean = 5.42, sd = 1.10) compared to those from the present to the future (non-gain frame: mean = 2.96, sd = 1.38). Therefore, H2 is supported.

Discussion

The results of Experiment 2 indicate that the interaction effect between chronic and situationally induced regulatory focus on purchase intention is significant. More specifically, prevention-focused messages may effectively induce prevention focus, which makes prevention-oriented individuals sensitive, whereas promotion-focused messages may not do so. These results replicate those of Experiment 1.

The results of Experiment 2 support our expectation that the impact of regulatory fit on purchase intentions depends on how promotion- and prevention-focused messages are framed. Unlike prior studies (e.g., Boone, 2012) that dichotomized performance advancement and price drop as (dis)advantageous situations for consumers, we developed the scenarios framed as gain, non-gain, loss, and non-loss based on message contents and reference time points. Furthermore, as individuals are exposed to promotion- (prevention-) focused messages from the past to the present as gain (non-loss) and those from the present to the future as non-gain (loss), promotion (prevention)-oriented individuals more sensitively respond to the gain-framed promotion-focused (loss-framed prevention-focused) messages compared to the non-gain-framed promotion-focused (non-loss-framed prevention-focused) messages. Thus, this study clarifies the roles of regulatory fit, as well as product innovation message frames, in making purchase decisions. These results are also in line with prior studies highlighting that promotion- (prevention-) oriented individuals more sensi-

Table 3
Results of Experiment 3.

ANOVA results				
	Df	Sum of square	Mean of Square	F-value
Chronic regulatory focus (CRF)	1	70.00	69.98	18.67 ***
Situationally induced regulatory focus (SIRF)	1	17.00	16.97	4.53 *
CRF X SIRF	1	2.20	2.17	0.58
Residuals	208	779.80	3.75	

ANCOVA results				
	Df	Sum of square	Mean of Square	F-value
CRF	1	69.98	69.98	19.76 ***
SIRF	1	16.97	16.97	4.79 *
Reference time points (RTP)	1	27.53	27.53	7.77 **
Uncertainty avoidance	1	4.71	4.71	1.33
Present focus	1	11.11	11.11	3.14 †
CRF X SIRF	1	2.80	2.80	0.79
CRF X RTP	1	5.20	5.20	1.47
SIRF X RTP	1	0.37	0.37	0.10
CRF X SIRF X RTP	1	14.82	14.82	4.18 *
Residuals	202	715.42	3.54	

Planned contrasts

For promotion-oriented individuals

Performance advancements (n = 60)		Price drops (n = 60)	
Gain (n = 29)	Non-gain (n = 31)	Non-loss (n = 29)	Loss (n = 31)
Mean = 5.31 (sd = 1.87)	Mean = 4.39 (sd = 2.02)	Mean = 4.36 (sd = 1.60)	Mean = 4.52 (sd = 2.88)
t = 1.84, p < 0.1		t = 0.26, p > 0.1	

For prevention-oriented individuals

Performance advancements (n = 52)		Price drops (n = 40)	
Gain (n = 26)	Non-gain (n = 26)	Non-loss (n = 19)	Loss (n = 21)
Mean = 4.15 (sd = 1.73)	Mean = 3.50 (sd = 1.54)	Mean = 3.97 (sd = 1.03)	Mean = 2.17 (sd = 1.32)
t = 1.44, p > 0.1		t = 4.85, p < 0.001	

† p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.
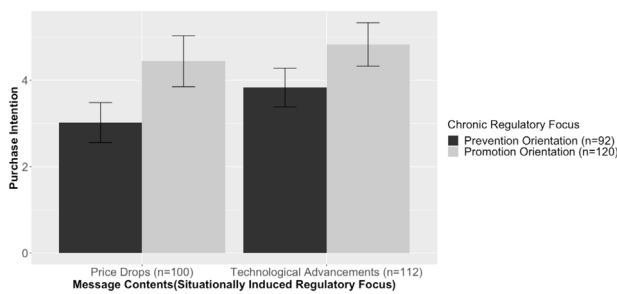
Fig. 4. Results of Experiment 3: planned contrasts.

tively perceive gain- (loss-) framed information (Liberman et al., 2005; Sacchi & Stanca, 2014) and that promotion- (prevention-) inducing messages may differentiate purchase intentions when messages are framed as gain (loss) versus non-gain (non-loss) (Lee & Aaker, 2004; Zou & Chan, 2019). These results were intact even after we included individuals' present focus, indicating the robustness of the results.

Result and discussion of experiment 3

Result

Table 3 shows the results of Experiment 3. A two-way ANOVA result indicated that the main effects of chronic regulatory focus, $F(1, 208) = 18.67$, $p < 0.001$, and situationally induced regulatory focus, $F(1, 208) = 4.53$, $p < 0.05$, were significant but their interaction was not. As shown in Fig. 4, the follow-up planned contrasts indicated that prevention-oriented individuals had statistically lower purchase intentions when exposed to prevention-focused messages (mean = 3.03, sd = 1.49) than promotion-focused messages (mean = 3.83, sd = 1.65) (t = 2.44, p < 0.05). However, promotion-

oriented individuals did not exhibit this difference between the two types of messages. Although the interaction effect was not significant, these results replicated those of Experiment 1 and 2 by showing that prevention-oriented individuals are more sensitive to prevention-focused messages, compared to promotion-focused messages.

We conducted a 2 (chronic promotion versus prevention focuses) X 2 (situationally induced promotion versus prevention focuses) X 2 (reference time point: from the past to the present versus from the present to the future) ANCOVA after controlling for the effects of present focus and uncertainty avoidance. As shown in Table 3, present focus had a marginally significant relationship with purchase intentions, $F(1, 202) = 3.14$, $p < 0.1$, while uncertainty avoidance did not. Reference time points, $F(1, 202) = 7.77$, $p < 0.01$; chronic regulatory focus, $F(1, 202) = 19.76$, $p < 0.001$; and situationally induced regulatory focus, $F(1, 202) = 4.79$, $p < 0.05$, had significant relationships with purchase intentions. None of the two-way interaction effects were significant. However, the three-way interaction effect (chronic regulatory focus X situationally induced regulatory focus X reference time point) was significant, $F(1, 202) = 4.18$, $p < 0.05$.

As shown in Table 3, when exposed to promotion-focused messages, prevention-oriented participants did not show statistically significant differences in their purchase intentions between the two reference time points that represent gain and non-gain situations (t = 1.44). When exposed to prevention-focused messages, promotion-oriented participants did not show statistically significant differences in their purchase intentions between the two reference time points that represent loss and non-loss situations (t = 0.26).

However, prevention-oriented participants had statistically lower purchase intentions (t = 4.85, p < 0.001) when exposed to the messages about price drops from the present to the future (loss frame: mean = 2.17, sd = 1.32), compared to those from the past to

the present (non-loss frame: mean = 3.97, sd = 1.03). Despite the marginality, promotion-oriented participants also had higher purchase intentions (t = 1.84, p < 0.1) when exposed to the messages about performance advancements from the past to the present (gain frame: mean = 5.31, sd = 1.87), compared to those from the present to the future (non-gain frame: mean = 4.39, sd = 2.02). Overall, the results indicated that the effects of regulatory fit and framing are intact even after controlling for uncertainty avoidance and present focus simultaneously, further supporting H2.

Discussion

The results of Experiment 3 confirm that the effects of regulatory fit on purchase intention are contingent on the message frames in the product domain of household solar panel systems, being different from the one in Experiments 1 and 2 (electric cars). We confirm that promotion- (prevention-) oriented individuals respond differently to gain- (loss-) framed messages versus non-gain (non-loss) messages (Idson et al., 2000; Liberman et al., 2005; Sacchi & Stanca, 2014). That is, when promotion-focused messages are presented, promotion-oriented individuals tend to have higher purchase intentions when the messages are framed as gains rather than non-gains. Similarly, when prevention-focused messages are presented, prevention-oriented individuals tend to show lower purchase intentions when the messages are framed as losses rather than non-losses. These differences could not be identified for the individuals exposed to messages not fitting their chronic regulatory orientations. We expected uncertainty avoidance to influence purchase intentions; the correlation between the two variables was marginally significant (r = −0.14, p < 0.1); however, this could not mitigate the roles of regulatory fit and message framing in affecting purchase intentions. These results further highlight the importance of regulatory fit and framing effects.

General discussion and conclusions

Theoretical contributions

Researchers (e.g., Holak et al., 1987; Boone et al., 2001; Boone, 2012) argued that consumers tend to postpone buying incumbent products, because they expect performance advancements and/or price drops in the near future. Drawing on the literature on the regulatory focus theory and framing effects (e.g., Lee & Aaker, 2004; Chowdhury et al., 2015), this study contributes to theoretically explaining the mechanism underpinning these behaviors. The results show that the two types of innovation messages can induce regulatory focus. The regulatory fit effect on purchase intention is significant, mainly for prevention-oriented individuals with prevention-focused messages, highlighting the consumers' efforts to meet their goals—avoidance of undesired end-states. Hence, this study helps understand how and why consumers selectively consider messages, depending on their regulatory focus, when they process information about product innovation (e.g., Jain et al., 2007; Song & Morton, 2016; Higgins et al., 2020).

This study is one of the few (if not the first) that operationalizes message framing based on reference time points, along with innovation contents: distinguishing gain (performance advancements from the past to the present) from non-gain (performance advancements from the present to the future) and differentiating loss (price drops from the present to the future) from non-loss (price drops from the past to the present). We believe that this is particularly important for the following reason: as the role of promotion fit was not significant, we showed that message frames (gain/non-gain and loss/non-loss) and regulatory fit together tend to affect purchase decisions (see Fig. 1). More specifically, for promotion-oriented individuals, the purchase intention is significantly higher with gain-framed promotion-focused messages compared to non-gain-framed promotion-focused messages. For prevention-oriented individuals the purchase intention is significantly lower with loss-framed prevention-focused messages compared to non-loss-framed prevention-focused messages. These results are in line with the literature on framing (Lee & Aaker, 2004; Liberman et al., 2005; Sacchi & Stanca, 2014; Zou & Chan, 2019), thereby demonstrating the mechanisms by which individuals' purchase intentions may vary depending on the nature of their goals and the ways in which their goals are achieved. Furthermore, consumers' purchase intentions are more parsimoniously explained by the framing based on the reference time points, in addition to regulatory fit. This study offers a more nuanced understanding of how consumers perceive innovation outcome messages, which, in turn, influences their decisions to buy existing products by delving into the message contents.

We should note that the roles of regulatory focus and message framing hold even when present focus and uncertainty avoidance are included in the analysis. This is particularly important as the framing effects may be less salient because prevention-oriented individuals tend to value immediate and realized consequences rather than expected and uncertain consequences (e.g., Mogilner et al., 2007; Joireman et al., 2012;). Thus, the results highlight the combined importance of the effects of regulatory focus and framing in decision-making contexts.

Implications for practitioners

The results provide important implications for organizations that announce their product innovation efforts. These efforts may help firms signal their technology- and innovation-orientation in the market, increasing their values. However, messages can decrease consumers' intentions to purchase incumbent products and increase *cannibalization potentials* even before new products are launched. In this regard, this study found that message framing, based on the reference time points in regulatory fit conditions, underlies purchase intentions, which provides important implications for marketers. Considering that organizations have limited abilities to manipulate chronic regulatory focus, despite its critical role in regulatory fit mechanisms, marketers need to appropriately manage the messages that can induce promotion focus (performance advancements) and prevention focus (price drops) and frame gains and losses based on the reference time points. That is, marketers must develop innovation messages that can enhance gain perceptions in the technological-advancement context and reduce loss perceptions in the price-drop context when they announce innovation outcomes.

Limitations and future research

This study is not free from limitations, which should be addressed in future research. First, we did not explicitly consider loss aversion in the three experiments due to the research focus. When we operationalized situationally induced regulatory focus based on the messages about performance advancements and price drops, which can respectively contribute to framing gains and losses, consumers may be more sensitive to price-drop messages due to their loss aversion—human nature (Kahneman & Tversky, 1984)—particularly as chronically and/or situationally prevention-oriented individuals tend to rather exhibit loss aversive behaviors (Halamish et al., 2008; Scholer et al., 2010). We controlled for the equivalent levels (i.e., amounts and percentages) of performance advancements and price drops while operationalizing the gain (non-gain) and loss (non-loss) frames. However, if loss looms larger than gain (Kahneman & Tversky, 1984), the effect of price drops may be more salient. The result that promotion-oriented

individuals do not show statistical differences between promotion- and prevention-focused messages may be partly attributed to loss aversion tendency. Therefore, future studies need to explore the different levels of performance advancements and price drops to better identify the loss aversion embedded in new product purchasing.

Second, this study intentionally analyzed two product contexts that are remotely related to participants' daily lives. The price levels of the products are somewhat high although we asked participants to assume that they have the financial abilities to purchase them. The samples in Experiments 1 and 3, by nature, can reduce the generalizability of the results; however, we conducted an experiment with a potential customer group (Experiment 2) and found identical results to those of Experiments 1 and 3. As such, this study should be expanded to product domains more in line with participants' consumption contexts.

Appendix 1. Messages Used in Experiment 1

Technological Advancements

In the automotive industry, new technologies are being continuously developed to increase electric vehicles' (EV) single-charging mileages. EV specialists expect EVs with 350 miles on a single charge will be introduced in 2017–2018. Similarly, car makers plan to launch EVs with 300 miles on a single charge in 2018 and ones with 400-mile on a single charge in 2020. According to industry sources, US electric car company A (*company pseudonym*) will launch Zero (*EV pseudonym*), a high-performance electric sedan that can run 400 miles on a single charge in 2018 on a 130-watt lithium-ion battery. When Zero is released, it will be the car with the longest mileage on a single charge. Experts predict that EVs with 400-mile on a single charge will trigger a rapid diffusion of EVs. Meanwhile, carmaker B (*company pseudonym*) is developing EVs that can go 300- and 400-mile on a single change. The company plans to launch an electric SUV capable of driving 300 miles in 2018 and 400 miles by 2020 on a single charge. Carmaker C (*company pseudonym*) has developed a high-density battery and will introduce 400-mile EVs in 2020. EV battery makers also plan to introduce high energy density batteries that have capacities of 400-mile on a single charge around 2020. Korean electronics company D (*company pseudonym*) has recently unveiled its next-generation of electric car batteries that have up to 370 miles on a single charge (around 600 km) at the 2017 North American International Auto Show (NAIAS). The battery cell is capable of driving 300 miles, which is 80% of its capacity, achieved in 20 min of fast charging. Mass production is expected by 2021. Other electronics companies are also planning to mass-produce large-capacity batteries that have capacities of up to 370 miles on a single charge (around 600 km) by 2019–2020.

Price Drops

At the heart of the electric car evolution is a battery. Batteries account for 40–50% of the production cost of electric vehicles (EVs) and thus determine their prices. In other words, as the technology of the battery cell is improved, vehicle prices can be lowered. The price of battery packs installed in EVs was $800/KWh in 2013 and now dropped to $400–500/KWh. By 2020, it is expected to fall to $100/

kWh, which can trigger sufficient demand. The US Department of Energy (DOE) estimates that the price of a recent lithium-ion battery is 70% lower than that of an EV battery released in 2011. Starting this year, the commercialization of EVs with second generation batteries will begin. The electric car launched by carmaker A (*company pseudonym*) in 2017 is equipped with a 60-kWh battery and the price before the government subsidies is $37,495. Another company, B, unveiled the prototype of an electric car with a second-generation battery last March and priced it at $35,000. The EV is expected to go into production later this year. Industry experts predict that, if the battery cell price can be lowered to a certain level, the vehicle price will be $4,000 lower. If the price of the battery cell will drop to $100 per KWh in the near future, as more second-generation batteries appear on the market, the diffusion of EVs will be accelerated.

Appendix 2. Messages Used in Experiment 2

Technology Advancements from the Past to the Present (Gain)

Every year, the single charging distances for electronic vehicles (EVs) are increasing. While the initial electric cars could drive 100 km on a single charge, current ones can travel about 400 km on a single charge. According to industry experts, a high-performance electric sedan, Zero (*EV pseudonym*), recently released by electric car company A, can drive up to 380 km on a single charge with a 60-kWh battery pack. This is two times higher than the EV that company A (*company pseudonym*) released in 2013. Among the various reasons, the evolution of the battery has contributed most to this improvement. The US Department of Energy (DOE) estimates that the energy density of recent lithium-ion batteries has improved by more than 50% compared to the EV batteries released in 2011. It is reported that the actual performance improvement recognized by battery companies and their customers is more than double.

Technology Advancements from the Present to the Future (Non-gain)

Single charging distances for electronic vehicles (EVs) will increase. While EVs sold in the market can now drive around 400 km on a single charge, upcoming EVs will have up to 700 km on a single charge. According to industry experts, a high-performance electric sedan, Zero (*EV pseudonym*), which will be soon released by electric car company A, will drive up to 640 km on a single charge with a 90-kWh battery pack. This is two times higher than for the EV that company A (*company pseudonym*) has currently on sale. Among the various reasons, the evolution of the battery is contributing most to this improvement. The US Department of Energy (DOE) estimates that the energy density of recent lithium-ion batteries will improve by more than 50% compared to the EV batteries being currently sold. It is reported that the actual performance improvement recognized by battery companies and their customers is expected to be more than double.

Price Drops from the Past to the Present (Non-loss)

With the recent development of battery cell technologies, the price of electric vehicles (EVs) has decreased. At the heart of the electric car evolution is a battery. Batteries account for 40–50% of the production cost of EVs and determine the price of vehicles. In other words, as the technology of the battery cell improves, the vehicle price will be lower. For instance, the price per KWh of battery cell packs mounted on EVs was $700 in three years ago, and it is $400 now. The US Department of Energy (DOE) estimates that the price of a recent lithium-ion battery is 60% lower than that of an EV battery released in 2011. Recently, American electric car *company A*

(*company pseudonym*) have recently launched a second-generation electric car, Zero (*EV pseudonym*), whose price is similar to that of traditional oil-based cars. Therefore, the car has been considered to overcome a major disadvantage of EVs.

Price Drops from the Present to the Future (Loss)

With the recent development of battery cell technologies, the price of electric vehicles (EVs) is expected to fall further. At the heart of the electric car evolution is a battery. Batteries account for 40–50% of the production cost of EVs and determine the price of vehicles. In other words, as the technology of the battery cell improves, the vehicle price can be lower. For instance, the price per KWh of battery cell packs mounted on EVs is $400. However, it is expected to drop to $100 within three years. The US Department of Energy (DOE) estimates that the price of a recent lithium-ion battery will be 60% lower than that of an EV battery sold now in the market. American electric car *company A* (*company pseudonym*) will introduce a second-generation electric car, Zero, whose price is similar to that of traditional oil-based cars. Therefore, the car will overcome a major disadvantage of EVs.

Appendix 3. Messages Used in Experiment 3

Technology Advancements from the Past to the Present (Gain)

The performance of photovoltaic (PV) systems continues to improve. The increase in the efficiency of solar cells, a key component of the system, has led to significant improvements. Solar cells convert solar energy into electrical energy. As the efficiency of the cell increases, more electricity can be produced under the same conditions. According to the Energy Research Institute (EER), the average efficiency of solar cells sold in the market in 2017 was 14%. The efficiency in 2019 improved to 24%, which can increase the overall output of systems by 30%. This has raised users' perceptual performances. For instance, two household air conditioners could be run for up to five hours when the systems are generated for around four hours in summer. However, residential PV systems in the market now have the abilities to run two air conditioners for up to eight hours under the same conditions. Recently, the demand for solar power systems is increasing, as more consumers have installed more than two air conditioners and try to reduce their electricity bills.

Technology Advancements from the Present to the Future (Non-gain)

The performance of photovoltaic (PV) systems is expected to improve. The increase in the efficiency of solar cells, a key component of the system, will lead to such improvements. Solar cells convert the energy of sunlight into electrical energy. As the efficiency of the cell increases, more electricity can be produced under the same conditions. According to the Energy Research Institute (ERI), the average efficiency of solar cells sold in the market is 24%. However, the efficiency in 2019 will improve to 34%, which can increase the overall output of systems by 30%. This will raise consumers' perceptual performances. For instance, two household air conditioners could be run for up to eight hours when the systems are generated for around four hours in summer. However, in 2021, residential PV systems in the market will have abilities to run two air conditioners for up to 12 h under the same conditions. The demand for solar power systems is expected to increase, as more consumers are installing more than two air conditioners in their house and try to reduce their electricity bills.

Price Drops from the Past to The Present (Non-loss)

The price of photovoltaic (PV) systems has continued to fall. This price drop results from solar cell technology developments, which accounts for the largest portions of the production cost of PV systems. According to the Energy Research Institute (ERI), the price of silicon solar cells used in household systems was around $650 per kW in 2017 but dropped by 30% to $410 per kW in 2019. Additionally, the price of inverters, an essential component that converts solar-produced electricity into usable electricity in households, has also fallen by 50%, lowering the total price of PV systems. Perceptual price drops are even greater. Now, consumers can install PV systems in their homes for 30% less than a few years ago due to these price drops. Unusual high temperatures due to climate changes have led consumers to install more than two air conditioners in their house. Hence, the demand for PV systems has increased, as more consumers try to reduce their electricity bills.

Price Drops from the Present to the Future (Loss)

The price of photovoltaic (PV) systems is expected to fall. This results from solar cell technology developments, which account for the largest portion of the production cost of PV systems. According to the Energy Research Institute (ERI), the price of silicon solar cells used in households is around $410 per kW now but will fall by 30% to $280 per kW by 2021. Additionally, the price of inverters, an essential component that converts solar-produced electricity into usable electricity in households, will also drop by 50%, which will lower the total price of PV systems. Perceptual price drops will be even greater. Accordingly, consumers can install PV systems in their homes for 30% less now due to these price drops. Unusual high temperatures due to climate changes lead consumers to install more than two air conditioners in their houses. Hence, the demand for PV systems will increase, as more consumers try to reduce their electricity bills.

Appendix 4. Items Used

Chronic Regulatory Focus

   [Promotion Focus]

1 When it comes to achieving things that are important to me, I find that I don't perform as well as I would ideally like to do.®
2 I feel like I have made progress toward being successful in my life.
3 When I see an opportunity for something I like, I get excited right away.
4 I frequently imagine how I will achieve my hopes and aspirations.c
5 I see myself as someone who is primarily striving to reach my "ideal self" – to fulfill my hopes, wishes, and aspirations.

   [Prevention Focus]

1 I usually obeyed rules and regulations that were established by my parents.
2 Not being careful enough has gotten me into trouble at times.®
3 I worry about making mistakes.
4 I frequently think about how I can prevent failures in my life.
5 I see myself as someone who is primarily striving to become the self I "ought" to be – fulfill my duties, responsibilities and obligations.

Purchase Intention

[Electronic vehicle context in Experiment 1 and 2] Do you have an intention to buy an electric vehicle sold in the market with total power = 88 Kw (120 ps), max torque = 295 Nm, real range = 200 Km in averages condition in the near future?

[Solar panel systems context in Experiment 3] Do you have an intention to buy the solar panel systems (maximum capacity = 440 W, maximum voltage = 18.3, operating temperature range = -20 50 °C, price = 7.15 Million Korean Won) in the near future?

[Mood]

1 I am satisfied.
2 I am excited.
3 I am happy.
4 I am worried.®
5 I am nervous.®
6 I am concerned.®

[Uncertainty Avoidance]

1 I prefer structured situations to unstructured situations.
2 I prefer specific instructions to broad guidelines.
3 I tend to get anxious easily when I don't know an outcome.
4 I feel stressful when I cannot predict consequences.
5 I would not take risks when an outcome cannot be predicted.
6 I believe that rules should not be broken for mere pragmatic reasons.
7 I don't like ambiguous situations.

[Present Focus]

1 I focus on what is currently happening in my life.
2 My mind is on the here and now
3 3.I think about where I am today.
4 I live my life in the present

References

Aaker, J. L., & Lee, A. Y. (2006). Understanding regulatory fit. *Journal of Marketing Research, 43*(1), 15–19.

Ashraf, A. R., Razzaque, M. A., & Thongpapanl, N. T. (2016). The role of customer regulatory orientation and fit in online shopping across cultural contexts. *Journal of Business Research, 69*(12), 6040–6047.

Avnet, T., & Higgins, E. T. (2006). How regulatory fit affects value in consumer choices and opinions. *Journal of Marketing Research, 43*(1), 1–10.

Block, L. G., & Keller, P. A. (1995). When to accentuate the negative: The effects of perceived efficacy and message framing on intentions to perform a health-related behavior. *Journal of Marketing Research, 32*(2), 192–203.

Boone, S. D. (2012). Consumer purchase decisions under asymmetrical rates of technological advance and price decline. *International Journal of Strategic Decision Sciences, 3*(2), 20–30.

Boone, D. S., Lemonb, K. N., & Staelin, R. (2001). The impact of firm introductory strategies on consumers' perceptions of future product introductions and purchase decisions. *The Journal of Product Innovation Management, 18*(2), 96–109.

Brendl, C. M. M., Higgins, E. T., & Lemm, K. M. (1995). Sensitivity to varying gains and losses: The role of self-discrepancies and event framing. *Journal of Personality and Social Psychology, 69*(6), 1028–1051.

Bridges, E., Yim, C. K., & Briesch, R. A. (1995). A high-tech product market share model with customer expectations. *Marketing Science, 14*(1), 61–81.

Camacho, C. J., Higgins, E. T., & Luger, L. (2003). Moral value transfer from regulatory fit: What feels right and what feels wrong is wrong. *Journal of Personality and Social Psychology, 84*(3), 498–510.

Castaño, R., Sujan, M., Kacker, M., & Sujan, H. (2008). Managing consumer uncertainty in the adoption of new products: Temporal distance and mental simulation. *Journal of Marketing Research, 45*(3), 320–336.

Chang, T. Z., & Wildt, A. R. (1994). Price, product information, and purchase intention: An empirical study. *Journal of the Academy of Marketing Science, 22*(1), 16–27.

Chowdhury, G. T., Micu, C., Ratneshwar, S., & Kim, E. (2015). What to get and what to give up: How different decision tasks and product types affect the persuasiveness of promotion-versus prevention-focused messages. *Psychology & Marketing, 32*(9), 920–933.

Clement, A. P., Jiaming, F., & Li, L. (2020). Green advertising and purchase decisions in live-streaming B2C and C2C interactive marketing. *International Journal of Information and Management Sciences, 31*(2), 191–212.

Cripps, J. D., & Meyer, R. J. (. (1994). Heuristics and biases in timing the replacement of durable products. *The Journal of Consumer Research, 21*(2), 304–318.

Crowe, E., & Higgins, E. T. (1997). Regulatory focus and strategic inclinations: Promotion and prevention in decision making. *Organizational Behavior and Human Decision Processes, 69*(2), 117–132.

De Silva, M., Wang, P., & Kuah, A. T. (forthcoming). Why wouldn't green appeal drive purchase intention? Moderation effects of consumption values in the UK and China. Journal of Business Research.

Ebrahim, R., Ghoneim, A., Irani, Z., & Fan, Y. (2016). A brand preference and repurchase intention model: The role of consumer experience. *Journal of Marketing Management, 32*(13–14), 1230–1259.

Fazeli, Z., Shukla, P., & Perks, K. (2020). Digital buying behavior: The role of regulatory fit and self-construal in online luxury goods purchase intentions. *Psychology & Marketing, 37*(1), 15–26.

Florack, A., Keller, J., & Palcu, J. (2013). Regulatory focus in economic contexts. *Journal of Economic Psychology, 38*, 127–137.

Halamish, V., Liberman, N., Higgins, E. T., & Idson, L. C. (2008). Regulatory focus effects on discounting over uncertainty for losses vs. gains. *Journal of Economic Psychology, 29*(5), 654–666.

Haws, K. L., Dholakia, U. M., & Bearden, W. O. (2010). An assessment of chronic regulatory focus measures. *Journal of Marketing Research, 47*(5), 967–982.

He, Y., Chen, Q., & Alden, D. L. (2016). Time will tell: Managing post-purchase changes in brand attitude. *Journal of the Academy of Marketing Science, 44*(6), 791–805.

Herzenstein, M., Posavac, S. S., & Brakus, J. J. (2007). Adoption of new and really new products: The effects of self-regulation systems and risk salience. *Journal of Marketing Research, 44*(2), 251–260.

Higgins, E. T. (1997). Beyond pleasure and pain. *The American Psychologist, 52*(12), 1280–1300.

Higgins, E. T. (2000). Making a good decision: Value from fit. *The American Psychologist, 55*, 1217–1230.

Higgins, E. T., Friedman, R. S., Harlow, R. E., Idson, L. C., Ayduk, O. N., & Taylor, A. (2001). Achievement orientations from subjective histories of success: Promotion pride versus prevention pride. *European Journal of Social Psychology, 31*(1), 3–23.

Higgins, E. T., Idson, L. C., Freitas, A. L., Spiegel, S., & Molden, D. C. (2003). Transfer of value from fit. *Journal of Personality and Social Psychology, 84*(6), 1140–1153.

Higgins, E. T., Nakkawita, E., & Cornwell, J. F. (2020). Beyond outcomes: How regulatory focus motivates consumer goal pursuit processes. *Consumer Psychology Review, 3*(1), 76–90.

Hilary, G., & Hui, K. (2009). Does religion mater in corporate decision making in America? *Journal of Financial Economics, 93*(3), 45–476.

Höflinger, P. J., Nagel, C., & Sandner, P. (2018). Reputation for technological innovation: does it actually cohere with innovative activity? *Journal of Innovation & Knowledge, 3*(1), 26–39.

Holak, S. L., Lehmann, D. R., & Sultan, F. (1987). The role of expectations in the adoption of innovative consumer durables: Some preliminary evidence. *Journal of Retailing, 63*(3), 243–259.

Hsu, C. L., Yu, L. C., & Chang, K. C. (2017). Exploring the effects of online customer reviews, regulatory focus, and product type on purchase intention: Perceived justice as a moderator. *Computers in Human Behavior, 69*, 335–346.

Idson, L. C., Liberman, N., & Higgins, E. T. (2000). Distinguishing gains from non-losses and losses from non-gains: A regulatory focus perspective on hedonic intensity. *Journal of Experimental Social Psychology, 36*, 252–274.

Jain, S. P., Lindsey, C., Agrawal, N., & Maheswaran, D. (2007). For better or for worse? Valenced comparative frames and regulatory focus. *The Journal of Consumer Research, 34*(1), 57–65.

Joireman, J., Shaffer, M. J., Balliet, D., & Strathman, A. (2012). Promotion orientation explains why future oriented people exercise and eat healthy: Evidence from the two-factor consideration of future consequences-14 scale. *Personality & Social Psychology Bulletin, 38*(10), 1272–1287.

Jung, J. M., & Kellaris, J. (2004). Cross-national differences in proneness to scarcity effects: The moderating roles of familiarity, uncertainty avoidance, and need for cognitive closure. *Psychology & Marketing, 21*(90), 739–753.

Kahneman, D., & Tversky, A. (1984). Choices, values, and frames. *The American Psychologist, 39*, 341–350.

Ketelaar, P. E., Van't Riet, J., Thorbjornsen, H., & Buijzen, M. (2018). Positive uncertainty: The benefit of the doubt in advertising. *International Journal of Advertising, 37*(2), 256–269.

Lee, A. Y., & Aaker, J. L. (2004). Bringing the frame into focus: The influence of regulatory fit on processing fluency and persuasion. *Journal of Personality and Social Psychology, 86*(2), 205–218.

Lee, S. M., & Trimi, S. (2018). Innovation for creating a smart future. *Journal of Innovation & Knowledge, 3*(1), 1–8.

Leonidou, L. C., Kvasova, O., Christodoulides, P., & Tokar, S. (2019). Personality traits, consumer animosity, and foreign product avoidance: The moderating role of individual cultural characteristics. *Journal of International Marketing, 27*(2), 76–96.

Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes, 76*(2), 149–188.

Liberman, N., Idson, L. C., & Higgins, E. T. (2005). Predicting the intensity of losses vs. non-gains and non-losses vs. gains in judging fairness and value: A test of

the loss aversion explanation. *Journal of Experimental Social Psychology*, *41*(5), 527–534.

Lin, H. F., & Shen, F. (2012). Regulatory focus and attribute framing: Evidence of compatibility effects in advertising. *International Journal of Advertising*, *31*(1), 169–188.

Mogilner, C., Aaker, J. L., & Pennington, G. L. (2007). Time will tell: The distant appeal of promotion and imminent appeal of prevention. *The Journal of Consumer Research*, *34*(5), 670–681.

Park, K., & Lee, K. (2016). Is green product purchasing an innovative or conspicuous behavior? *Social Behavior and Personality an International Journal*, *44*(1), 29–44.

Pentina, I., Bailey, A. A., & Zhang, L. (2018). Exploring effects of source similarity, message valence, and receiver regulatory focus on yelp review persuasiveness and purchase intentions. *Journal of Marketing Communications*, *24*(2), 125–145.

Pham, M. T., & Chang, H. H. (2010). Regulatory focus, regulatory fit, and the search and consideration of choice alternatives. *The Journal of Consumer Research*, *37*(4), 626–640.

Polonsky, M. J., Vocino, A., Grimmer, M., & Miles, M. P. (2014). The interrelationship between temporal and environmental orientation and pro-environmental consumer behaviour. *International Journal of Consumer Studies*, *38*(6), 612–619.

Richins, M. L. (1997). Measuring emotions in the consumption experience. *The Journal of Consumer Research*, *24*(2), 127–146.

Rogers, E. M. (1995). *Diffusion of innovations*. New York, NY: Free Press.

Roy, R., & Naidoo, V. (2021). The role of implicit lay belief, SEC attributes and temporal orientation in consumer decision making. *Journal of Business Research*, *122*, 411–422.

Sacchi, S., & Stanca, L. (2014). Asymmetric perception of gains versus non-losses and losses versus non-gains: The causal role of regulatory focus. *Journal of Behavioral Decision Making*, *27*, 48–56.

Schilling, M. A., & Shankar, R. (2019). *Strategic management of technological innovation*. New York, NY: McGraw-Hill Education.

Scholer, A. A., Zou, X., Fujita, K., Stroessner, S. J., & Higgins, E. T. (2010). When risk seeking becomes a motivational necessity. *Journal of Personality and Social Psychology*, *99*(2), 215.

Shipp, A. J., Edwards, J. R., & Lambert, L. S. (2009). Conceptualization and measurement of temporal focus: The subjective experience of the past, present, and future. *Organizational Behavior and Human Decision Processes*, *110*(1), 1–22.

Song, D., & Morton, C. R. (2016). The influence of regulatory focus on the effect of product cues. *Psychology & Marketing*, *33*(11), 917–933.

Trivedi, R. H., & Teichert, T. (2019). The effect of ad smiles on consumer attitudes and intentions: Influence of model gender and consumer gender. *Journal of Business Research*, *99*, 197–205.

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, *211*(4481), 453–458.

Yoon, Y., Sarial-Abi, G., & Gürhan-Canli, Z. (2012). Effect of regulatory focus on selective information processing. *The Journal of Consumer Research*, *39*(1), 93–110.

Zeng, H., & Hao, L. (2016). Cross-cultural examination of the effects of promotional framing on consumers' responses: A comparison of China and Pakistan. *International Business Review*, *25*(5), 1020–1029.

Zhao, R., Geng, Y., Liu, Y., Tao, X., & Xue, B. (2018). Consumers' perception, purchase intention, and willingness to pay for carbon-labeled products: A case study of Chengdu in China. *Journal of Cleaner Production*, *171*, 1664–1671.

Zou, L. W., & Chan, R. Y. (2019). Why and when do consumers perform green behaviors? An examination of regulatory focus and ethical ideology. *Journal of Business Research*, *94*, 113–127.