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Exploring Digital Nudges in Green Purchase Intentions: The Influence of Green Claims and Social Norms

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Keywords: Digital nudges, Green claims, Social norms, Green purchase intentions, Greenwashing

1. Background

With the advancement of information and communications technology (ICT), we are exposed to environmental knowledge from various sources and can witness the impacts of environmental crises in real time. Consequently, the rise of global environmental concerns has led to campaigns and initiatives from both the public and private sectors to address these issues. The question remains: Why are sustainable ways of living still far from being achieved, despite industries' efforts to transition to greener pathways and public sector attempts to promote policies that encourage behavioral changes?

While environmental awareness is linked to behavior, translating this knowledge into consistent action at the individual level remains an ongoing challenge. Apart from systematic obstacles such as the lack of supportive infrastructure and economic factors, irrational behaviors and ingrained habits often deter individuals from making sustainable choices.

Digital nudging harnesses the power of technology to counteract these barriers by influencing more sustainable decisions with various strategies. Therefore, this study aims to investigate how digital nudges with informational provisions influence green purchase intentions.

1.1 Transition to circular economy (CE) in the context of Thailand

In line with global trends, Thailand aims to shift towards a sustainable pathway. The Thai government has announced its net zero target by 2065 and prioritized the BCG (Bio-Circular-Green) economy in its national agenda, highlighting its commitment to environmental protection. Thailand is advancing towards a circular economy

through policy implementation, industry transformation, and shifts in individual behavior.

Thailand is still early in its transition to a circular economy. To reduce CO₂ at the market level through regulatory approaches, the Securities and Exchange Commission (SEC Thailand) has launched regulations for corporates to disclose non-financial information, including environmental, social, and governance (ESG) performance in their annual reports. However, this disclosure and the audit of information are still voluntary (Securities and Exchange Commission Thailand, 2020).

In terms of market-driven factors, not only does competition among corporates drive the transition, but also the understanding of the importance of environmental information and the power of social norms from society. The fragmentation of these efforts highlights discrepancies between policies and practices.

This study focuses on the intentions to purchase in the household products sector, as household products are responsible for 40% of environmental damage (Srisathan et al., 2023). Both the government and private sector have encouraged increased consumer awareness about the environmental impacts of their purchases. This is particularly important for developing countries like Thailand.

1.2 The barriers to green consumption

Despite the growing demand for green products, this shift of green consumption is accompanied by the widespread issue of greenwashing, which undermines genuine sustainability efforts. Greenwashing occurs at both the firm and product levels and is defined as “the act of misleading consumers regarding the environmental practices of a company (firm-level greenwashing) or the

environmental benefits of a product or service (product-level greenwashing)” (Delmas and Burbano, 2011). This practice involves selectively emphasizing positive information while hiding negative impacts, which overloads consumers with information and makes it more difficult for them to evaluate the product.

For Thai people, the concern about greenwashing is quite high compared to worldwide statistics. Approximately 38% of consumers worldwide question the trustworthiness of brands marketing products as sustainable, with 56% of Thais expressing doubts about the real motivation of such companies (Premium Beauty News, 2023). Consumers are most likely to believe that environmental claims are another way for selling more expensive products. This skepticism leads to hesitation among Thai consumers, who often question why green products are more expensive than regular products.

The real challenge is that these barriers do not stand alone and are faced within a single green purchase journey. These barriers include difficulty in identifying green products, questioning the credibility of claims, and affording higher prices and less variety of choices. Overcoming these barriers is essential for fostering genuine green consumption and advancing the circular economy in Thailand.

2. Literature reviews

To influence people's behavior, give them a nudge. To ensure rapid spread, go digital. Digital nudge refers to “the use of user-interface design elements to guide people’s behavior in digital choice environments” (Weinmann and Brocke, 2016). Historically, the major drivers of green buying behavior in the literature have been “intrapersonal values related to the environment” (Testa et al. 2021). However, turning these values and attitudes into behaviors is not automatic. People need information, and as time passed, people's memory and environmental awareness decreased, so it is suggested that they be continually exposed to environment-related information (Mitomo and Otsuka, 2012).

Studies have extensively explored the effectiveness of digital nudges across various

contexts, such as energy and food (Stieglitz et al., 2023). focusing on methods like default, framing, goal setting, feedback, and social norms. This study adopts online nudging strategies instead of focusing on interface design elements.

2.1 Green claims, social norms and intentions for green purchase

(1) Green Claims: In marketing or advertising communication, green claims refer to “the practice of suggesting or otherwise creating the impression (in a commercial communication, marketing or advertising) that a good or a service has a positive or no impact on the environment or is less damaging to the environment than competing goods or services” (EU Commission 2016). Green claims convey environmental information to consumers, and how consumers perceive this information can affect their purchasing intentions and behaviors (Iovino et al., 2024).

Srisathan et al. (2023) defined green products as “any products whose qualities are designed to be toxin-free, maximize resource efficiency, use water and energy efficiently, and minimize environmental impacts. Their characteristics include being manufactured under hygienic conditions without toxic chemicals, being biodegradable and recyclable, being eco-efficient, using the minimum number of resources, and having a minimal carbon and plastic footprint”. Similarly, this study mainly focuses on eco-friendly home consumption items, such as natural cleaning products.

(2) Social Norms: reflect the social pressure that an individual perceives regarding specific topics; they substantially influence behavioral intentions by aligning their purchasing feelings and actions (Srisathan et al., 2023). The study also suggested that being green can coincide with being online for some reasons and levels. In this regard, being online and green is both an uphill battle for Thai people.

The literature gap lies in understanding what consumers actually feel about green claims. Most consumers are skeptical and confused about credibility of green claims. More evidence is needed to understand how consumers perceive green claims

and social norms, and how they reward them with higher purchasing intentions.

2.2 Theory of planned behavior, Value-Belief-Norm, and Cognition-Affect-Behavior model

In the field of pro-environmental behavior, the Theory of Planned Behavior (TPB) (Ajzen, 1991) and the Value-Belief-Norm (VBN) model (Stern, 2000) are widely adopted. TPB highlights attitudes as key drivers of outcomes, suggesting that attitudes, subjective norms, and perceived behavioral control influence intentions and behaviors. Similarly, the VBN model explains that values, beliefs, and personal norms drive pro-environmental behaviors. These grounded theories provide an understanding of how consumers' perceptions of green claims, combined with social norms, lead to purchase intentions and behaviors.

Additionally, this study further applies the Cognition-Affect-Behavior (CAB) model to understand greenwashing and its impact on green purchase intentions. With the CAB model as a backbone, several studies have developed buyer behavior models, including the well-known theory of buyer behavior by Howard and Sheth (1969) (Laroche et al., 2001). This model has also been used by Nguyen et al. (2019) to explain that consumers' cognitions about greenwashing (C) lead to affect (A) or judgment, which in turn influences behavior or purchase intentions (B). In extension, this study investigates the context of digital nudges and online social norms, providing an understanding of consumer behavior in digital environments.

3. Research Questions

This study aims to investigate the effects of green claims and social norms on green purchase intentions. Specifically, it seeks to understand how individual and combined exposures to green claims and social norms influence their intentions to purchase green products. This study poses two research questions:

RQ1: Does exposure to green claims or online social norms affect green purchase intentions among respondents?

RQ2: Does the combination of both green claims and social norms result in higher green purchase intentions than either strategy alone?

4. Hypothesis

Companies use green claims to make products stand out as being more responsible toward the environment and thus to influence consumers behaviors. (Iovino et al., 2024). Studies have focused on identifying which types of green claims and green advertising appeals most effectively convince consumers to engage in sustainable consumption.

Yang et al. (2015) explored the effectiveness of concrete versus abstract appeals in green advertising. Concrete appeal includes detailed and rich information, while abstract appeal uses vague wording and describes features more generally. Their study found mixed results, indicating that while detailed information is persuasive, it is not universally more influential than abstract appeals.

According to Knobloch-Westerwick and Kleinman (2012), "Informational utility is the degree to which information can aid individuals in making future decisions". People need information that acts as a mediator between their attitudes and actual green behaviors (Testa et al., 2020). Based on this background, H1 is proposed as follows:

H1: *Green purchase intentions are higher among respondents exposed to green claims compared to those who are not exposed to green claims*

Several studies have assessed the positive effect of norm-based interventions on pro-environment intentions or behaviors, such as improving household electricity use intentions, actual recycling behavior, towel reuse, and household water use (DellaValle and Zubaryeva, 2019). Social norms nudge pro-environmental behaviors by conveying information about what others do or think, which then influencing people's environmental attitudes and behaviors Castro-Santa et al. (2023). In their study, social norms were studied together with advertising to see how they nudge low-carbon consumption. The results from the mean choices between baseline and treatment show that social norms significantly affect low-carbon choices. Based on

this background, H2 is proposed as follows:

H2: *Green purchase intentions are higher among respondents exposed to online social norms compared to those who are not exposed to online social norms.*

Additionally, Castro's results (2023) show the interaction effect between social norms and green advertising. When combining these effects, the effect size of green advertising was greater than that of social norms and could influence consumers even if they could not recall the green advertisement, while norms only boosted product attributes.

This study hypothesizes that the interaction effect of green claims and social norms will be greater than their single effects. Not only does the information influence consumer decision, but knowing that they are acting in accordance with others could reaffirm their intentions. Based on this, H3 is proposed as follows:

H3: *The combination of both green claims and social norms will result in higher green purchase intentions than either strategy alone.*

5. Methodology

This study employed a 2x2 factorial experimental design, manipulating exposure to green claims and social norms. This stage is a pilot version aimed at exploring the feasibility of the experiment. Therefore, this section will report the preliminary results.

5.1 Research Design

A questionnaire survey was completed by 595 Thai respondents who have experience choosing products or services online. The survey was distributed between May 6-12, 2024, through the WANG platform, where respondents received monetary compensation for completing the survey. Snowball sampling was employed to reach a wider audience despite the impossibility of generalization with this method. Creswell (2015) noted that this type of sample can provide useful information for answering questions and testing hypotheses.

Respondents were asked to provide their demographic data and were then randomly assigned

to one of four groups (see Figure 1 for more details). They did not see the other groups and were asked about their green purchase intentions (dependent variable) based on their exposure.

Group 1 (<i>N</i> = 114) No claims & no norms	Group 2 (<i>N</i> = 182) No claims & norms
Group 3 (<i>N</i> = 184) Claims & no norms	Group 4 (<i>N</i> = 115) Claims & norms

Figure 1

Source: Author

5.2 Measurements

(1) Digital nudges: A 2 (Informational: no green claims vs. green claims) x 2 (social norms: no norms vs. norms) analysis of green purchase intentions. The materials used in this experiment were images with green claims and online social norms. For the baseline condition, there was only an image of a green product and an ordinary product. In the green claims treatment, the messages were taken from actual claims, using rich information with detailed clues, as referred to as concrete appeal by Yang et al. (2015). For example, “reduce energy use and CO2 emissions by 18% per kilogram.” In the social norm treatment, the study used messages “75% of customers have purchased this product before you” for the green product and “25% of customers have purchased this product before you” for the ordinary product.

(2) Green purchase intentions: was assessed using items adapted from Goh and Balaji (2016). The items included: “I intend to purchase this green product in the future because of my environmental concern”, “I expect to purchase this green product in the future because of its environmental performance”, and “I am glad to purchase this green product in the future because it is environmentally friendly”. Additional items related to personal behaviors, such as information seeking and green commitment, were added, including: “I plan to seek out more information about this green product to make informed purchases in the future” and “I am committed to reducing my carbon footprint by choosing this green product whenever possible”.

5.3 Data analysis

IBM SPSS Statistics 28.0 was used to test the proposed hypotheses.

(1) Descriptive analysis: The survey respondents are primarily female, comprising 65.2% of the sample. A significant majority of the respondents are young adults, with 53.3% aged 16-25. Most respondents, 63.9%, earn less than 20,000 THB, potentially impacting their green purchasing intentions. (See Figure 2 for more details).

		Count	Column N %
Gender	Female	388	65.2%
	Male	207	34.8%
Age	0	0	0.0%
	<15	7	1.2%
	16-25	317	53.3%
	26-35	157	26.4%
	36-45	86	14.5%
	46-55	22	3.7%
	>55	6	1.0%
Income	0	0	0.0%
	<20,000	380	63.9%
	20,000 - 40,000	155	26.1%
	40,000 - 60,000	41	6.9%
	60,000 - 80,000	6	1.0%
	80,000 - 100,000	3	0.5%
	>100,000	10	1.7%

Figure 2

Source: Author

(2) Hypothesis testing: To test Hypotheses 1-3, green purchase intentions were assessed using five items. The internal consistency of these items was checked using Cronbach's Alpha, which yielded a value of .876, indicating high reliability. The average score of these items was calculated to measure overall green purchase intentions. An initial analysis of green purchase intentions revealed a mean of 3.799 and a standard deviation of 0.864. Normality tests (Kolmogorov-Smirnov and Shapiro-Wilk) confirmed a non-normal distribution ($p < .001$). Given this deviation, non-parametric methods were used for further analysis.

(2.1) H1 was tested by comparing the green purchase intentions between respondents exposed to green claims and those not exposed. The results of the Mann-Whitney U test indicated a statistically

significant difference in green purchase intentions between the groups (Mann-Whitney $U = 40139.500$, $n_1 = 296$, $n_2 = 299$, $Z = -1.970$, $p = .049$). However, the mean rank for the group not exposed to green claims (311.89) was higher than the mean rank for the group exposed to green claims (284.25), which is contrary to the initial hypothesis. Therefore, H1 is rejected.

(2.2) Social norms and green purchase intentions: H2 was tested by comparing green purchase intentions between respondents exposed to social norms and those not exposed. The results indicated no significant difference in green of purchase intentions between the groups (Mann-Whitney $U = 42227.500$, $n_1 = 298$, $n_2 = 297$, $Z = -0.970$, $p = .332$). Therefore, H2 is rejected.

(2.3) Combination of green claims and social norms: To test H3, a Kruskal-Wallis test was conducted to compare green purchase intentions among the four groups. It indicated no statistically significant difference in green purchase intentions among the four groups ($\chi^2(3) = 7.164$, $p = .067$). Therefore, H3 is also rejected.

6. Findings and discussions

These preliminary results suggest that neither green claims nor social norms alone, or in combination, significantly influenced green purchase intentions.

(1) Respondents not exposed to green claims had higher green purchase intentions than those exposed, indicating the information utility of green claims did not reach respondents effectively. This could arise out of skepticism, as Delmas and Burbano (2011) highlight that green claims can lead to greenwashing. Yang et al. (2015) found that specific types of green claims are more effective than others, and poorly executed green claims can lead to negative reactions. Moreover, consumers may need clear and factual signals, such as third-party certifications, to trust green claims (Iovino et al., 2024).

When respondents saw simple pictures

without green claims in this experiment, they possibly just relied on intrinsic motivations, leading to higher green purchase intentions. To further understand why respondents could not be nudged by green claims, future analysis of this study should integrate other psychological factors.

(2) Respondents exposed and not exposed to social norms did not show significant differences in green purchase intentions. Previous studies have shown mixed impacts of social norms. Some studies report shifts to greener options when individuals become aware that most others consume green goods (Castro-Santa et al., 2023; Demarque et al., 2015), while others report null results (DellaValle and Zubaryeva, 2019) or even a boomerang effect (Richter et al., 2018). For the context of Thailand, this contrasts with Srisathan (2023), which found that perceived digital social norms had a significant positive effect on customer attitudes toward purchasing green products online.

One explanation is that norms manipulated by directly stating a certain percentage of people undertake a behavior (Castro-Santa et al., 2023) were found in this study. It should be noted that while online social norms could be useful for providing information, the online domain is more complex and anonymous than the real world. The effectiveness of these social norms can vary depending on how well they are integrated into the consumer's digital experience—the way social norms are presented online and whether they feel naturally integrated, as well as their alignment with previous knowledge and experience, play a significant role.

7. Contribution and limitations

This study contributes to the existing literature by demonstrating the crucial role of the levels and types of information needed to influence consumer intentions and behaviors. Especially, it highlights the challenges of digital nudges in shaping green purchase intentions within the specific context of Thailand. These preliminary findings suggest that green claims need to be closely regulated in terms of policies to ensure

credibility and effectiveness. Additionally, the context of using online social norms needs to be well-integrated and strategically presented to maximize their impact on consumer behaviors.

However, this study has several limitations that should be addressed in future steps. Firstly, there were no direct manipulation checks for the experimental conditions (green claims and social norms). Without these checks, it is difficult to confirm that respondents perceived the manipulations as intended. Secondly, the study's findings are limited in terms of generalizability. Future surveys should control for demographic variables to enhance the reliability and generalizability of the findings.

Last but not least, building on these preliminary results from a pilot survey, further analysis with additional factors is necessary to explain the whole picture. In future analysis of this study, other psychological factors must be incorporated to better explain the underlying mechanisms in this attitude-behavior gap. Additionally, integrating economic incentives could provide a more dynamic understanding of green purchase intentions.

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