

The Influence of Digital Nudging Techniques on Thai Consumer Impulse Buying Behavior for Fashion Apparel in Online Stores

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Abstract

Aim/Purpose: This study examined the impact of digital nudging on the online purchasing behavior of Thai fashion consumers. It identified which of four digital nudging techniques, such as social proof, scarcity, default settings, and visual cues, were the most effective in driving behavior. Additionally, it investigated whether perceived persuasiveness mediates the relationship between these nudges and impulse buying.

Introduction/Background: As more Thai consumers interact with online shopping sites such as Shopee and TikTok Shop, digital nudge strategies based on cues (social proof, scarcity) are used to drive impulse purchasing. Online fashion retailers in Thailand are increasingly using social commerce platforms and mobile applications to engage consumers through visually appealing and interactive digital environments. These platforms incorporate digital nudging techniques to influence consumer decisions and encourage purchase behavior without restricting consumer choice. Although digital nudge strategies have been shown to be successful in Western markets, there is limited research on their impact on Thai fashion shoppers. The current study examined how digital nudge strategies influence impulse purchases among Thai fashion shoppers, using a mediation model that incorporates perceived persuasiveness.

Methodology: A quantitative research design was used in this study. A total of 400 Thai online fashion consumers who had experience purchasing clothing products through social commerce platforms such as TikTok Shop and Shopee within the previous 90 days were sampled via convenience sampling; an online questionnaire (Google Form) was used to collect data. Reliability was assessed using Cronbach's alpha, and all constructs exceeded the recommended threshold of .70, indicating strong internal consistency. Construct validity was supported through the use of previously validated measurement scales and expert review procedures to ensure content relevance and clarity. Descriptive statistics, correlation analysis, multiple regression, and PROCESS mediation analysis were used to analyze data collected from the survey. PROCESS (Model 4) was used to test the mediation effect.

Findings: First, the analysis revealed that the perceived persuasiveness of a platform was significantly and positively correlated with both social proof ($\beta = .355, p < .001$) and visual cues ($\beta = .437, p < .001$); visual cues had the largest impact on perceived persuasiveness. Second, the findings indicated that scarcity ($\beta = .029, p = .509$) and default settings ($\beta = -.010, p = .810$) did not have a direct effect on perceived persuasiveness, suggesting these nudging techniques do not affect how Thai fashion shoppers evaluate a platform's persuasiveness. Third, the study found that digital nudging had a direct effect on impulse buying ($b = .604, p < .001$), as this technique triggered unplanned purchases among consumers. Finally, while the results of digital nudging affect how persuasive a platform is to be perceived by consumers, this perception did not translate into actual shopping behavior. Therefore, the mediation effect was not supported, as the confidence interval for the indirect effect included zero (indirect effect = .060, 95% CI [-.02, .13]).

Contribution/Impact on Society: This theoretical research builds on persuasive technology models by demonstrating a “null mediation” relationship. It illustrated how digital nudges may elicit impulse purchases both directly and intuitively from an individual’s perspective, without using a person’s perception of persuasion as a mediator. Therefore, the notion that people must be convinced by a platform of its ability to affect them prior to acting has been challenged. In addition, since these nudge triggers can directly stimulate specific types of consumer behavior, more rigorous ethical standards need to be developed so that platform design architects create choice architectures that support the achievement of United Nations Sustainable Development Goal 12 (Responsible Consumption and Production).

Recommendations: Retailers should focus on using visual cues and social evidence to enhance consumer engagement and impulse purchases, as well as on creating aesthetically pleasing, easy-to-navigate interfaces, rather than relying on persuasive messaging. At the same time, designers need to incorporate transparent ethics into their designs to not encourage overconsumption. Researchers should examine potential mediators (i.e., emotional arousal, trust, and fear of missing out) in future studies. The use of cross-cultural studies would provide an opportunity for researchers to study how digital nudges can be used to promote sustainable consumption.

Research Limitations: The current study had limitations due to its concentration on the Thai apparel manufacturing industry. The study also had an age bias toward young people. Therefore, this could limit the applicability of the results to some degree for other industries or demographics.

Future Research: Further studies could examine how the dynamic described above relates to various product lines and cultural environments. Future study is needed to understand the other potential mediating factors (i.e., emotional arousal) and moderating variables (i.e., FOMO, trust) in digital nudging to further clarify the psychological processes behind this. In addition to cross-cultural studies, future studies would also be beneficial for examining various configurations of nudge and consumer response in a variety of markets and behaviors. Finally, future studies should also integrate UN Sustainable Development Goal 12 (Sustainable Consumption) to better assess the ethical implications of digital nudging.

Keywords: *Digital nudging, impulse buying, online fashion, Thailand*

Introduction

Over the last decade, consumers of Thai fashion have dramatically changed their purchasing behavior from in-store to a much more interactive online experience. Apps such as Shopee, Lazada, Instagram Shop, and TikTok Shop have turned the fashion-consumption experience into a fast-paced visual search for the latest trends. Fashion consumers no longer browse products; they navigate digital retail environments designed to prompt rapid purchases.

Retailers in Thailand are increasingly turning to online platforms to reach consumers who use smartphones and access social media. Design in online commerce has evolved to include both the aesthetic form and functional elements of a website or mobile app. Design can also encourage purchase through features such as "Only 3 items left," "Best Seller," "X people viewing right now," and bundled products. Behavioral economists have described these features as "nudges" that shape behavior through design without being coercive. The term "digital nudge" was first used by Weinmann et al. (2016) to describe how digital interfaces, including colors, buttons, social cues, timing/urgency messages, and default settings, can influence consumers' choices on digital platforms.

The models developed by Schürmann et al. (2023), on which digital nudges for sustainable fashion in Western countries were based, are likely to be limited when transferred to Southeast Asia. As argued by Suciati et al. (2025), the digital market in this region is characterized as an "integrated" space where social interactions take place seamlessly during purchases, payment systems are easy to use, and exclusive offers are the norm. Therefore, it can be questioned whether the same forms of

nudges applied in the West (scarcity, default, etc.) will work as well in the mobile-first, highly socially interactive retail context found in Thailand.

While much has been written about digital nudging in the Western e-commerce space, most prior studies have assumed a cognitive mediation process; therefore, if a digital nudge is to effectively prompt an action from a consumer, it must first be perceived by the consumer as a persuasive element.

In contrast, the fast-paced, entertainment-based nature of "social commerce" in Southeast Asia - such as TikTok Shop and Shopee Live creates a setting in which the distinction between browsing and purchasing becomes increasingly ambiguous. As a result, there is a significant gap in the body of knowledge regarding whether digital nudges within this cultural context act as explicit influences toward behavior or as direct, non-conscious behavioral triggers. The purpose of this study is to fill that void by testing a mediation model that questions the requirement for "perceived persuasiveness" to stimulate impulse purchases.

According to Nyrhinen et al. (2024), the digital nudge effect that causes consumers to make impulse buys, which are defined as "immediate and spontaneous reactions" to environmental stimuli, is further amplified in the context of recreational fashion due to both social proof and visual stimulation. It also remains unclear whether such digital nudges use a cognitive persuasive method or serve as an intuitive trigger for the behavior. Zhang et al. (2024) suggested that when making purchasing decisions on platforms using high velocity live e-commerce, many consumer decisions may be made before having had time to reflect upon the platform's persuasive ability. Therefore, determining the degree to which a customer perceives a platform to be persuasive would provide insight into how social commerce operates today.

To stimulate engagement and purchase intentions, online fashion retailers in Thailand have increasingly relied on interface-related strategies. However, in the absence of empirical clarity on why these nudges work, firms either underutilize effective strategies or resort to overused manipulative tricks. In a digital economy where purchasers, especially those who are younger, are constantly bombarded with persuasive triggers, questions of ethically and ecologically conscious nudging are exceedingly pressing.

Therefore, this research aimed to explore these three factors in Thai online fashion. First, it tested how particular techniques of digital nudging, such as social proof, scarcity cues, default settings, visual reminders, or their manipulations may influence perceived persuasiveness. Second, it examined whether digital nudging directly affects impulse buying behavior. Third, it tested perceived persuasiveness by examining whether the relationship between total digital nudging and impulse purchasing among Thai consumers was mediated by perceived persuasiveness. In response to these questions, the study provides empirical evidence from the emerging digital economy and examines the mediating role of perceived persuasiveness on digital choice architectures and their impact on consumer behavior in social commerce systems.

Three key contributions are offered by this study. Firstly, it shows that in Thai social commerce, visual and social nudges use System 1 processing to bypass cognitive evaluation of persuasiveness on platforms. Secondly, it extends nudge theory to Southeast Asia and demonstrates that 'social proof' is a more effective tool than Western-centric nudges such as 'scarcity' or 'defaults'. Thirdly, it links the economic efficacy of nudge theory with United Nations Sustainable Development Goal 12, advocating for the use of the responsible choice architecture framework to address ethical risks associated with direct behavioral triggers.

Research Objectives

This research study attempted to reach three specific goals: first, to assess how well four different types of digital nudge tactics (social proof, scarcity, default setting, and visual cue) compared to each other as far as increasing the likelihood that consumers in Thailand would make purchases from a fashion-related social commerce platform. Second, to determine if these tactics influence consumer perception of the digital platform's persuasiveness. Third, to identify through mediation analysis

whether the tactics used by the firm to influence consumer decision making influenced consumers' ability to cognitively think about their purchases, or whether they caused impulsive reactions.

Literature Review

Digital Nudging in Online Environments

The nudge strategy, which is based on behavioral economics, describes the deliberate design of choice architecture to guide consumers to certain behaviors, but does not restrict their freedom of choice (Hettler et al., 2025). While traditionally utilized for government policy, the shift toward digital interfaces has transformed nudging into an important tool for behavior. Hettler et al. (2025) pointed out that digital nudge strategies leverage interface-based design elements, such as placement of buttons, color highlighting, and default options, to change user behavior. Although these design elements may seem trivial, they have a great impact on how users interact with websites and make complex decisions in digital environments.

Mirsch et al. (2017) identified four primary forms of digital nudging, specifically: social proof, scarcity cues, default settings, and visual cues. In the case of social proof signaling (e.g., "best-seller" labels, large numbers of reviews), an individual's reliance on conformity bias is targeted. When using scarcity cues (e.g., limited time/availability), urgency is created. In addition, the selection of default options incurs less cognitive effort when making decisions. Finally, visual cues used in website design guide users to certain areas of the website (Jachimowicz et al., 2019; Schneider et al., 2018).

Most research on Digital Nudges has taken place within Western laboratories, and very little research exists on their efficacy within emerging Asian digital economies (such as Thailand) that utilize social commerce, mobile-first marketing strategies, and influencer content. Thailand presents a unique market environment as social commerce and mobile commerce platforms provide both entertainment and social interaction. While most recent digital nudge literature has been based in Western settings, Thailand's developing digital economy provides a new and exciting marketplace for social commerce to combine the elements of entertainment and the use of mobile-first technologies. Website Aesthetics and Social Media Connectivity are significant precursors that reduce transaction costs and cue purchases, thereby increasing impulse purchasing behavior among younger consumers (Ngo et al., 2025; Nyrhinen et al., 2024).

Impulse Buying in Online Fashion Retail

Impulsive purchases are defined as strong and long-lasting desires to buy something immediately that do not allow for rational evaluation (Zahoor et al., 2026). The ease of instant gratification in mobile applications is a major contributor to impulse purchasing in the digital fashion industry. While previous studies have traditionally focused on individual characteristics that contribute to impulsive purchasing decisions, this study evaluated whether high-velocity digital environment choice architectures triggered impulsive response behaviorally or were cognitively mediated by perceived persuasiveness.

Perceived Persuasiveness as a Psychological Mechanism

User perception of a system as persuasive represents how users perceive its impact (Wiafe et al., 2022). Aesthetic design enhances credibility and mediates usage; however, people often use either "quick and dirty" heuristics or "deliberate," "systematic" thinking when making decisions (Zhang et al., 2014). When high levels of arousal are experienced, one's automatic responses eliminate reflective thought; thus, while perceived persuasiveness may lead to intentional reasoning, it is typically circumvented in fast-paced, impulsive situations.

The dual-process theory provides a basis for describing how consumers interact with the design of their choices. According to Kannengiesser & Gero (2019), decisions are made by two systems. The first is called System 1, and it is fast, intuitive, and non-conscious. The second is called System 2, and it is slower, more analytical, and conscious. When an individual is in a highly active digital environment, such as shopping online, there may be so many stimuli that they use System 1 when making purchasing

decisions. Because of this lack of reflection, consumers may become impulsive buyers even if they had no intention of being persuaded by the website.

The Thai Online Fashion Context

Over the last decade, Thailand has experienced an explosion of fashion e-commerce, primarily through social media platforms that integrate commerce (Shopee, Lazada) with social media, influencers, and entertainment (Instagram Store & TikTok Store). Thai consumers, particularly those aged 18 to 35, drive the Thai market due to social validation from peers and the ability to conduct live-commerce streaming. The West focuses on generating urgency through limited supply and time-sensitive purchases, but in Southeast Asia, especially Thailand, a 'social commerce' model is built upon collective trust (Purboyo et al., 2025) and as such may induce 'scarcity-fatigue.' This means that rather than creating an unstable behavior through manufactured urgency, social proof is a more consistent and reliable influence for these consumers.

Conceptual Framework and Research Hypotheses

The conceptual framework shown in Figure 1 combines Nudge Theory with Dual-Process Theory to explore the conflict that exists between automatic (System 1) and deliberate (System 2) thought processes. Using "Perceived Persuasiveness" as a mediator, the conceptual framework tested whether consumers needed to engage their conscious cognitive abilities (System 2) to be influenced by digital nudge strategies, or whether digital nudge strategies were able to directly trigger impulsive behaviors (System 1). Thus, a potential "mediation gap" was examined to see if consumer behavior may result from platform influence without their conscious awareness.

This mediation gap study was grounded in the Persuasive Technology Model; therefore, it examined perceived persuasiveness as a mediator to determine whether digital interfaces must be evaluated as "persuasive" or cognitive in nature to affect an individual's behavior. The study particularly focused on addressing the transferability of Western laboratory findings to social commerce in Southeast Asia. The study attempted to examine the mediation gap for indirect effects. A lack thereof would indicate that Thai social commerce trigger mechanisms work at the System 1 level (intuitive), rather than working at the System 2 level (deliberate evaluation of persuasion).

Based on the theoretical discussions presented above, the following hypotheses are proposed:

Hypothesis 1: The effect of digital nudging techniques on perceived persuasiveness is positive among Thai online fashion consumers.

$H_{1.1}$: Social Proof has a significant positive effect on Perceived Persuasiveness.

$H_{1.2}$: Scarcity positively influences Perceived Persuasiveness.

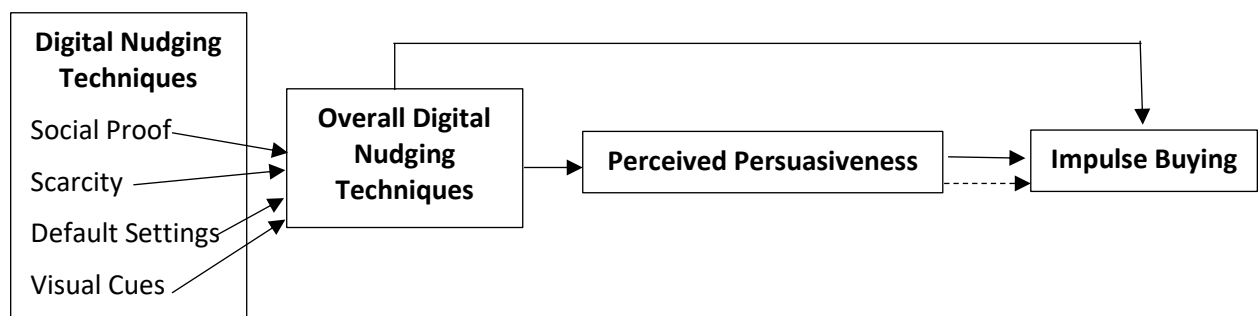
$H_{1.3}$: Default Settings are positively related to Perceived Persuasiveness.

$H_{1.4}$: Visual Cues are positively related to Perceived Persuasiveness.

Hypothesis 2: Digital Nudging Strategies have a positive impact on Impulse Buying of Thai online fashion consumers.

Hypothesis 3: Perceived Persuasiveness mediates the relationship between overall Digital Nudging and Impulse Buying behaviors among Thai online fashion consumers.

Figure 1 *Conceptual Framework*



Methodology

Research Design

In this study, an explanatory, quantitative, cross-sectional survey methodology was used based on a deductive research model. It utilized Nudge Theory and Dual-Process Theory to test hypotheses. A primary advantage of this design type is that it can be used to identify the causal relationships and mediating effects of nudge stimuli (digital stimuli) on impulse purchase behavior. Due to data collection at a single point in time, the findings represented a static snapshot of how consumers react to digital stimuli (nudges) within fast-paced environments such as social commerce.

Target Population and Sampling

The target group was composed of Thai customers between the ages of 18 and 35 years who had bought clothing products through social media shopping sites (i.e., TikTok Shop, Shopee) over the previous 90 days. The sample size was concentrated on the 20–29-year-old segment to reflect the major customer base for digital natives who purchase fashion items through e-commerce in Thailand (Purboyo et al., 2025).

Convenience sampling was used in this study because there was no single source to sample; this is a form of non-probability sampling. Strict selection criteria (screening) were employed to ensure the sample was representative of the behaviors of Thai consumers engaged in social commerce. The use of such sampling methods provided internal validity related to the behavior of high-frequency online shoppers; however, they also limited generalizability across age groups.

Research Instruments

The assessment tool for this research study was constructed by modifying valid scales previously used in academia so that the variables would have good content validity. A twelve-item scale, based on the work of Schneider et al. (2020), was created to measure Digital Nudging as an overarching construct and its four dimensions (social proof, scarcity cues, default settings, and visual reminder). The mediating variable, Perceived Persuasiveness, was measured with a five-item scale adapted from Kaptein and Eckles (2012), and the dependent variable of Impulse Purchase was also measured with a six-item scale adapted from Zahoor et al. (2026).

All items used a 5-point Likert scale to maintain consistent evaluation. Data integrity was established using Cronbach's Alpha, and all constructs exceeded the .70 threshold (internal reliability). Construct validity was supported through the adaptation of established measurement scales and expert review procedures to ensure content appropriateness.

Data Collection Procedures

The questionnaires were made available on social media sites and fashion-related interest groups for four weeks. Remedies for Common Method Bias were implemented in this research: (a) respondents' anonymity was ensured to avoid Social Desirability Bias; (b) scales were counter-balanced; and (c) there was a clear distinction psychologically separating measures of independent and dependent variables. In addition, Harman's Single Factor Test demonstrated that no single factor accounted for more than 50% of the variance.

Data Analysis

Data was analyzed through SPSS v.28 to create descriptive statistics and to correlate data. The PROCESS Macro from Hayes (2018) (Model 4) was used to assess the mediation model (Hypothesis 3). A total of 5,000 bootstrap samples were employed. Bootstrap sampling is a non-parametric resampling technique that has been shown to have greater statistical power than traditional tests when assessing indirect effects. Thus, this method was selected as it provided a robust means of testing for the proposed "mediation gap" in Thai consumer behavior.

Predictive relationships were evaluated using multiple regression analyses. Collinearity diagnostics were assessed before interpretation; tolerance values $> .10$ and VIF values < 5.00 were observed, indicating no multicollinearity.

Results

Respondent Demographics

For this study, 400 usable responses were collected. Participants were largely female (76.0%), with a smaller number of males (17.8%) and LGBTQ+ (6.2%). The largest age group was 20–29 years old (59.8%), followed by 30–39 (12.4%), 40–49 (13.8%), and 50+ (14.0%). Most participants held an academic qualification equivalent to a bachelor's degree (71.3%), with 20% holding a higher qualification and 8.8% a lower qualification. Respondents were mainly comprised of students (52.8%), civil servants (19.8%), and private employees (14.8%). Monthly income varied: 35.3% earned less than 10,000 Baht, and 16.3% earned more than 50,000 Baht. Thus, the respondents were mostly digitally active younger females who represent Thailand's primary target demographic for online fashion shopping. For these participants, most of their shopping occurred via digital platforms such as Shopee (61.5%) and TikTok (22.8%). Also, 52.3% of respondents reported learning about products via social media, followed by search engines (19.8%), influencer marketing (14.5%), and advertising (13.5%). These results demonstrate how user-generated/organic content can shape consumer knowledge and purchasing intentions.

Descriptive Statistics and Correlations

Table 1 presents descriptive statistics and Pearson's correlation coefficients for the main study variables, including perceived persuasiveness, impulse buying behavior, visual cues, default setting, scarcity, and social proof, based on 400 valid responses. Table 1 shows that the average scores for digital nudging techniques ranged from 3.06 to 3.76, indicating moderate to high perceived levels of digital nudging and impulse-buying behavior among the sample group. Social proof ($M = 3.53$, $SD = .85$) and visual cues ($M = 3.56$, $SD = .88$) were perceived at moderate levels, whereas the highest mean score was in Perceived Persuasiveness ($M = 3.76$, $SD = .73$), and the lowest mean score was Impulse Buying ($M = 3.40$, $SD = .82$).

Pearson's correlation analysis showed that all the study variables were significantly positively correlated at the $p < .01$ level. The strongest relation was observed with visual cues ($r = .631$), which provided credible supporting arguments, alongside social proof ($r = .596$). Perceived persuasiveness was moderately related to impulse buying ($r = .393$), and moderate associations were also found for impulse buying with visual stimulus ($r = .392$) and social proof ($r = .469$).

While scarcity and default settings were significantly associated with the other constructs, their correlations were relatively weaker (vs. social proof and visual cues), suggesting a less impactful role than those of social proof and visual cues. Importantly, none exceeded .80, indicating the absence of serious multicollinearity and the variables' suitability for further regression analysis.

Table 1 Descriptive Statistics and Correlations of Digital Nudging Constructs and Impulse Buying Behavior

Nudging Techniques	Mean	SD	Social Proof (SP)	Scarcity (SC)	Default Setting (DF)	Visual Cues (VC)	Perceived Persuasiveness (PP)	Impulse Buying (IB)
Social Proof (SP)	3.53	.85	1.00					
Scarcity (SC)	3.06	.90	.543**	1.00				
Default Setting (DF)	3.21	.87	.387**	.387**	1.00			
Visual Cues (VC)	3.56	.88	.525**	.440**	.494**	1.00		
Perceived Persuasiveness (PP)	3.76	.73	.596**	.410**	.354**	.631**	1.00	
Impulse Buying (IB)	3.40	.82	.469**	.428**	.324**	.392**	.393**	1.00

Note. $p < .01$ (2-tailed)

Measurement Model Assessment

The psychometric properties of the scale were assessed using reliability and construct validity assessments, as reflected in Table 2. All constructs had a strong reliability, as shown by Cronbach's alpha scores for each construct, which ranged from .82 to .94, meeting Forero's (2023) threshold of .70. Also, factor analysis showed that all items for each construct measure loaded heavily (.60+) onto their respective measures, providing additional evidence of the measurement model's good fit.

Table 2 Reliability and Validity Assessment

Construct	Items	Cronbach's Alpha	Factor Loadings (Range)
Digital Nudging	12	.89	.68 – .85
Perceived Persuasiveness	5	.84	.72 – .81
Impulse Buying	6	.91	.75 – .89

Regression Analysis for Perceived Persuasiveness

The researcher confirmed multiple regression assumptions before conducting this study. All Variance Inflation Factors (VIFs) reflected in Table 3 were less than 5.00 (Tabachnick et al., 2007). This confirmed the absence of multicollinearity in the study's data. The researcher also confirmed through graphical inspections (P-P plots & scatter plots) that normality, linearity, and homogeneity of variance existed. Therefore, these results were as reliable as possible.

The results of the analysis examining whether the digital nudge methods affected perceived persuasiveness showed that these predictors explained a substantial portion of the variance in the data ($R^2 = .495$, $F = 96.880$, $p < .001$). Of all the persuasiveness predictors, visual cues were found to be more statistically significant than the others ($\beta = .437$, $p < .001$), with social proof being the second most significant predictor ($\beta = .355$, $p < .001$). Scarcity ($\beta = .029$, $p = .509$) and default settings ($\beta = -.01$, $p = .810$) did not achieve statistical significance.

Table 3 Multiple Regression Coefficients of Digital Nudging Techniques Predicting Perceived Persuasiveness

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	1.342	.130		10.356	.000		
Social Proof (SP)	.306	.040	.355	7.673	.000	.598	1.672
Scarcity (SC)	.021	.031	.029	.661	.509	.654	1.529
Default Setting (DF)	-.008	.033	-.010	-.240	.810	.713	1.402
Visual Cues (VC)	.364	.038	.437	9.547	.000	.611	1.637

Notes. $p < .05$ indicates statistical significance. DV = Perceived Persuasiveness; $R = .704$, $R^2 = .495$, Adjusted $R^2 = .490$, Std. Error of the Estimate = .524, $F = 96.880$, Sig. = .000

Mediation Analysis

The mediation model indicated that overall digital nudging techniques directly predicted perceived persuasiveness ($b = .6518$, $p < .001$). Digital nudging also had a significant direct impact on impulse purchase behavior ($b = .6035$, $p < .001$). When both digital nudging and perceived persuasiveness were entered simultaneously into the model, perceived persuasiveness did not statistically predict impulse buying ($p = .063$), suggesting the absence of a mediation effect. The 95% bootstrap confidence interval for the indirect effects included zero, indicating that mediation was not evident.

Table 4 outlines the hypotheses that explain how digital nudges function in the context of online fashion retail. The first set of hypotheses tested (Hypotheses 1.1 to 1.4) examined the effects of digital nudging techniques on the perceived persuasive effect. Two variables were identified as having the most statistically significant effects: visual cues had the greatest effect ($\beta = .437$, $p < .001$), and social proof was second ($\beta = .355$, $p < .001$). These findings indicated that a consumer's perception of a

platform's "look," as determined by visual design, imagery, aesthetic appeal, etc., along with social validation indicators (such as reviews, popularity indicators, endorsements from influencers, etc.), were key factors in determining the perceived level of credibility for a particular platform. Conversely, scarcity ($\beta = .029$, $p = .509$) and automatic settings ($\beta = -.010$, $p = .810$) did not show a statistically significant effect. Hypothesis 2: The statistical analysis demonstrated that a statistically significant relationship existed between digital nudge techniques and impulse buying ($b = .6035$, $p < .001$). Hypothesis 3 was rejected because perceived persuasiveness did not act as an intermediary variable since the confidence interval for the indirect effect contained zero. As such, the use of digital nudge techniques seems to have an influence on consumer impulsive behavior, causing intuitive or automatic responses to marketing stimuli rather than affecting the way consumers make reasoned decisions.

Table 4 Summary of Hypothesis Testing

Hypothesis	Relationship	Key result	Decision
$H_{1.1}$	Social Proof $\rightarrow$ Perceived Persuasiveness	$\beta = .355$, $p < .001$	Supported
$H_{1.2}$	Scarcity $\rightarrow$ Perceived Persuasiveness	$\beta = .029$, $p = .509$	Not Supported
$H_{1.3}$	Default Setting $\rightarrow$ Perceived Persuasiveness	$\beta = -.010$, $p = .810$	Not Supported
$H_{1.4}$	Visual Cues $\rightarrow$ Perceived Persuasiveness	$\beta = .437$, $p < .001$	Supported
H_2	Digital Nudging $\rightarrow$ Impulse Buying	$b = .6035$, $p < .001$	Supported
H_3	Perceived Persuasiveness mediates DN $\rightarrow$ IB	Indirect effect CI includes 0	Not Supported

Note. $p < .05$ indicates statistical significance.

To test the underlying psychological mechanism that led to these effects, Hayes' (2018) process macro (Model 4), using 5,000 bootstrap samples, was used. The results of this model are shown in Table 5. Digital nudging predicted both Perceived Persuasiveness (a-path: $b = .651$; $p < .001$) and Impulse Buying (total effect: $b = .604$; $p < .001$), but when both variables were entered simultaneously, Perceived Persuasiveness was not a significant predictor of Impulse Buying ($p = .063$). Therefore, the indirect effect was non-significant because the 95% Bootstrap Confidence Interval contained zero $[-.01, .13]$, confirming that there was no mediation effect.

Table 5 Mediation Analysis for Hypothesis 3

Hypothesis	Effect Type	Path Description	Coeff (b)	SE	p-value	95% CI (LL, UL)
	a-path	DN $\rightarrow$ Persuasiveness	.651	.05	$< .001$	[.55, .75]
	b-path	Persuasiveness $\rightarrow$ IB	.092	.07	.063	[-.01, .20]
	c-path	Total Effect (DN $\rightarrow$ IB)	.604	.05	$< .001$	[.50, .70]
	c'-path	Direct Effect (DN $\rightarrow$ IB)	.543	.06	$< .001$	[.42, .66]
H_3	Indirect	DN $\rightarrow$ Persuasiveness $\rightarrow$ IB	.060	.03	--	[-.01, .13]

Notes. DN: Digital Nudging; IB: Impulse Buying. LL: Lower Level; UL: Upper Level; CI: Confidence Interval. Path coefficients are unstandardized. Bootstrap sample size = 5,000. Indirect effect is significant if the 95% CI does not include zero.

Discussion

The overall model showed an overall measure of how well digital nudge tactics explained (or accounted for) the variation in how persuasive a given digital platform was to consumers; these results ($R^2 = .495$, $p < .001$) indicated that both visual design and social validation had significant effects on the way consumers perceive the persuasion of digital platforms. Overall, it appears that consumers tend to find platforms with more prominent visual cues and fewer structural elements, such as default settings, more persuasive.

The results demonstrate how Thailand differs from the typical Western retail model, which uses scarcity and pressure as triggers to induce impulsive behavior. On the other hand, it was clear from the research that Thai customers do not seem to be impacted by scarcity cues and are likely saturated with artificial scarcity (and therefore skeptical). Instead, they appear to rely on social proof and visual cues as indicators of collective approval and aesthetic credibility, rather than pressure-driven cues designed for individual consumers.

Digital Nudge Techniques on Perceived Persuasiveness

This study's findings suggested that both Social Proof and Visual Cues were significant predictors of perceived persuasiveness. This implied that Thai fashion consumers utilize these two cues as mental shortcuts. High-quality visuals indicate professionalism; Social Proof may serve as a cognitive heuristic to reduce uncertainty and ultimately mitigate the risk of making a wrong purchase decision. As such, the "Seeing is Believing" environment as posited by Huang et al. (2025) was confirmed. The authors suggested that social validation in video-based formats provides confirmation for purchasing decisions and encourages consumers to act quickly. Additionally, Filieri et al. (2021) determined that visual cues were the most influential variable affecting behavioral intentions because they immediately present the product attributes that allow for quick evaluation. Therefore, this research supports how Nudge Theory can be developed. Inspirational nudge (social proof/visuals) outperformed pressure type nudges (scarcity) in this context. This shows that cognitive persuasion in Southeast Asia primarily depends on visual credibility and collective trust rather than fabricated urgency.

On the other hand, neither scarcity nor default settings were statistically significant as predictive variables of perceived persuasiveness. The findings indicated a "habituation effect", where Thai consumers' habitual exposure to artificial urgency increased their marketing skepticism towards scarcity. Barton et al. (2022) also showed that scarcity effects depend on the level of consumer skepticism and lose their effectiveness when the market is saturated. Jachimowicz et al. (2019) showed that default settings operate subliminally; instead of acting through explicitly persuasive mechanisms, they act by influencing behavior via passive effort heuristics. Together, these results provide a critical boundary condition for Persuasive Technology Theory; while structural/pressure-based nudges may influence behavior within a behavioral domain, they tend to have little to no influence over a cognitive realm, such as how consumers perceive the persuasiveness of a platform.

Digital Nudge Techniques on Impulse Buying

Impulse shopping triggered by digital nudges has been shown to have a very significant direct effect statistically in digital environments. Thus, digital nudges trigger spontaneous purchasing behavior. In Thailand, nudging creates an easy way to make a purchase when consumers use their mobile devices to browse for entertainment purposes, thus eliminating rational thought processes and replacing them with emotional ones. Additionally, Mirbabaie et al. (2023) created the term "Nudge Stacking", which means a combination of several different types of digital nudges increases the amount of impulsive behavior.

In addition, Parvez and Kaushik (2026) have shown that digital cues are the base drivers of unplanned shopping. This supports the Stimulus Response (S-R) theory of Social Commerce from a theoretical standpoint by showing that digital nudges act as direct stimulation (S) and cause consumer responses (R). This demonstrates that in fast-paced retail settings, consumer environments often have greater influence than reason.

Perceived Persuasiveness as a Mediator

One of the most important findings from this study is that there is a "mediation gap", where digital nudges substantially improve perceived persuasiveness but do not increase impulse buying. This suggests that System 2 analytical evaluations process for credibility and trust, but System 1 heuristic impulses lead to purchase behavior. As Xie et al. (2026) have noted, with high velocity e-commerce

transactions, these purchase decisions skirt traditional transactional judgment in favor of emotional decision-making.

As such, the Direct Stimulus-Response (S-R) Pathway is suggested as an alternative theoretical model in which persuasive influence can be conceptualized as a secondary effect of the stimulus/response interaction process. This supports the "scroll, stop, shop" paradigm, in which ambient cues render the conscious persuasion process unnecessary (Moghaddam et al., 2024). Therefore, this clearly defines a primary boundary condition for Persuasive Technology Theory and implies that, while the mediating role of cognition continues to play an important part in higher risk purchasing decisions, it will be circumvented in lower involvement/high velocity situations where the 'persuasion filter' will be replaced by immediate emotional responses.

Conclusion and Implications

A key conclusion from this study is that digital nudges significantly affect the impulse-purchase behavior of Thai online consumers who shop for clothing. The primary way this occurs is via a direct behavioral pathway; however, cognitive mediation was less relevant. It appears that Visual Cues and Social Proof were the two most successful types of nudges examined in this study; these illustrate how effective interface design and social validation can significantly influence consumer purchase behaviors on social commerce platforms.

This demonstrates a mediation gap in social commerce. The lack of a significant mediation effect of perceived persuasiveness on the nudge to impulse buying relationship indicates that digital stimulation may influence behaviors independently of conscious evaluation. Thus, the study has challenged the Persuasive Technology Model as well as its most common use case, user interaction with an interface, and proposed instead a Direct Trigger Model for high-velocity digital environments where behavior is decoupled from conscious evaluation.

Retailers should therefore invest in high-quality images and social media-based visual marketing, as well as a strong social aspect, instead of using countdown timers or default options. The research shows policymakers the "hidden power of digital nudge". Because they can influence behavior directly without having an impact on the consumer's awareness, they have the potential to lead to excessive consumption. Therefore, the study is one example of why there is a demand for ethical design standards in Thailand, which would protect younger consumers' cognitive vulnerability and provide a foundation for their long-term contribution to global sustainable development.

Lastly, the study provides important evidence for the importance of ethical design for digital systems. Specifically, if designers rely too heavily on urgency cues and other high-arousal strategies in their digital products, they risk creating conditions that foster excessive consumption and lead to negative post-purchase consumer outcomes. As such, incorporating transparency and sustainable consumption principles into the development of digital products is crucial for promoting a balance between the commercial success of a product or service and the well-being of its users.

Limitations and Future Research Directions

Several constraints limit the generalizability of these results. The first is that using a convenience sample limits the results to an 18–35-year-old age group, which excludes other possible market segments. Secondly, the cross-sectional nature of the study provides a single moment in time (a snapshot) rather than allowing for causal relationships to be definitively established. Thirdly, since the data was self-reported, there may be potential response biases associated with measuring impulsive behaviors. Fourthly, as the study focused on the Thai fashion apparel industry, its results may not be generalizable to products that have higher involvement characteristics or different cultural backgrounds.

Future research needs to look at the "mediation gap" using affective mediators, including emotional arousal, fear of missing out (FOMO), and trust, that may be a better representation of non-conscious "System 1" decision-making processes. Research into "scarcity fatigue" and consumer marketing skepticism in Southeast Asia is necessary due to the lack of significance of scarcity and

defaults. Experimental or longitudinal methods could provide causal evidence and show how the impact of these factors changes over time. Finally, comparative cultural analyses are required to understand whether the Direct Stimulus Response (S-R) pathway is an exception to lower velocity markets such as Thailand, whereas future models need to incorporate Sustainable Development Goal 12 (Sustainable Consumption) so that the ethical risk of using direct behavioral triggers may be assessed.

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Author Contributions

Nadhakan Shinnaranantana: Conceptualization, methodology, investigation, data curation, formal analysis, visualization, writing—original draft, writing—review & editing, project administration.

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