

FACTORS AFFECTING IMPULSE BUYING BEHAVIOR IN LIVE COMMERCE: THE ROLE OF PARASOCIAL INTERACTION AND SCARCITY APPEAL

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Abstract

This article examines the influence of Parasocial Interaction (PSI) and Scarcity Appeal (SC) on Impulse Buying Behavior (IBB) in Thai Live Commerce, with Emotional Engagement (EE) and Perceived Urgency (PU) as mediators, grounded in the Stimulus-Organism-Response (S-O-R) Framework. An online survey was administered to 400 Thai consumers with Live Commerce purchase experience and analyzed using Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM; CFI = 0.974, TLI = 0.971, RMSEA = 0.033), and Bootstrap-based mediation testing. All eight hypotheses were supported. SC produced the strongest effect on PU ($\beta = 0.634$), reflecting the potency of real-time scarcity visualization in Live Commerce. PSI exerted a robust positive effect on EE ($\beta = 0.581$), exceeding estimates from other contexts—likely attributable to Thailand's high-context culture, which places heightened value on personal relationships and interpersonal trust. Both EE ($\beta = 0.347$) and PU ($\beta = 0.312$) positively predicted IBB and functioned as significant partial mediators: $PSI \rightarrow EE \rightarrow IBB$ (indirect effect = 0.202) and $SC \rightarrow PU \rightarrow IBB$ (indirect effect = 0.198). These findings represent the first integration of PSI Theory and Scarcity Theory within a unified multi-pathway S-O-R model in the Thai Live Commerce context. The partial mediation pattern supports Dual Processing Theory, confirming that IBB arises simultaneously through an affective route ($PSI \rightarrow EE \rightarrow IBB$) and a cognitive-urgency route ($SC \rightarrow PU \rightarrow IBB$). Findings provide actionable implications for streamers, marketers, and platform developers designing effective and ethically grounded Live Commerce strategies.

Keywords: Live Commerce, Parasocial Interaction, Scarcity Appeal, Impulse Buying Behavior, S-O-R Framework.

1. INTRODUCTION

Live Commerce has fundamentally transformed digital retail by integrating entertainment, real-time interaction, and commerce into a singular consumer experience. Since Alibaba launched Taobao Live in 2016—generating 44 billion yuan during a single Double 11 festival (Chen et al., 2022)—the phenomenon has expanded rapidly. In Thailand, the Live Commerce market is growing at over 35% annually, projected to reach 200 billion baht by 2025 (Department of Business Development, 2023), with TikTok Shop (37.3%), Shopee Live (32.5%), and Facebook Live (23.5%) collectively commanding

over 90% of the market. Live Commerce is distinguished from conventional e-Commerce by real-time streamer-viewer interactivity, dynamic scarcity cues, and a community atmosphere that transforms shopping into a social experience—conditions highly conducive to impulse buying behavior (IBB). Xu et al. (2020) demonstrated impulse purchase rates in Live Commerce to be 2.3 times higher than in traditional e-Commerce, with Thai Millennials and Gen Z—representing 68.8% of users—particularly susceptible (Wongthirathana et al., 2022).

Two key IBB antecedents remain understudied in the Thai context. Parasocial Interaction (PSI; Horton & Wohl, 1956) describes the one-sided emotional bond audiences develop with streamers; when streamers are perceived as trusted friends rather than salespeople, perceived purchase risk decreases and IBB likelihood increases (Labrecque, 2014; Lu et al., 2023). Scarcity Appeal (SC), grounded in Commodity Theory (Brock, 1968) and Psychological Reactance Theory (Brehm, 1966), is delivered in Live Commerce through countdown timers, declining inventory displays, and flash-exclusive pricing—triggering Perceived Urgency and IBB more effectively than traditional media (Lim et al., 2022).

The S-O-R Framework (Mehrabian & Russell, 1974), validated across e-Commerce (Eroglu et al., 2001), social commerce (Xiang et al., 2016), and TikTok Commerce (Zhang et al., 2022), provides the appropriate theoretical architecture. However, no study has integrated PSI and SC as dual stimuli within a unified S-O-R model while simultaneously testing the mediating roles of Emotional Engagement (EE) and Perceived Urgency (PU) in Thai Live Commerce—a gap Zheng et al. (2024) identified as urgently requiring empirical evidence from Southeast Asia.

This study addresses that gap by testing a model positioning PSI and SC as stimuli (S), EE and PU as internal psychological states (O), and IBB as the behavioral response (R), using SEM on 400 Thai consumers, with findings reported in the sections that follow.

2. LITERATURE REVIEW

2.1 Live Commerce in the Thai Context

Thailand ranks among Southeast Asia's fastest-growing Live Commerce markets, expanding at over 35% annually and projected to exceed 200 billion baht by 2025 (Department of Business Development, 2023), with growth accelerated by the COVID-19 pandemic (Zheng et al., 2024).

Four platforms dominate the market with distinct PSI- and SC-activation mechanisms. **TikTok Shop** (37.3%) leverages personalized content algorithms to expose consumers to live shopping without deliberate search intent, elevating impulse buying opportunities (Chen et al., 2022), while Virtual Gifts and Interactive Stickers build PSI among its Gen Z and Millennial base. **Shopee Live** (32.5%) derives strength from frictionless in-platform checkout that minimizes deliberative reconsideration (Xu et al., 2020), reinforced by verified Quantity Scarcity appeals through Coins Cashback and Live-exclusive vouchers. **Facebook Live** (23.5%) excels at PSI generation as streamers are often pre-existing social contacts reinforcing parasocial bonds with genuine social ties (Wongkitrungrueng & Assarut, 2020), though limited native checkout introduces purchase friction. **LINE Shopping Live** (4.8%) reaches audiences with pre-existing brand PSI via Official Account notifications but lacks real-time Scarcity Cue capabilities comparable to competing platforms. Remaining platforms (2.0%) serve niche communities characterized by Expert Parasocial Relationships. Three structural characteristics distinguish the Thai context: consumers average 2 hours and 55 minutes of daily social media engagement (DataReportal, 2024); Thailand's high-context cultural orientation amplifies PSI's behavioral influence relative to Western contexts (Wongkitrungrueng & Assarut, 2020; Ueathamthawon & Ueathamatawon, 2025); and Thai Gen Z consumers demonstrate above-regional-average Scarcity Appeal sensitivity (Wongthirathana et al., 2022)—rendering Thailand an

appropriate empirical setting for testing an integrated PSI–Scarcity Appeal model within the S-O-R Framework.

2.2 The S-O-R Framework and Its Application in Live Commerce

The S-O-R Framework (Mehrabian & Russell, 1974) posits those external environmental stimuli (S) trigger internal psychological states (O)—pleasure, arousal, and dominance per the PAD Model—which produce behavioral responses (R) as approach or avoidance tendencies. Eroglu et al. (2001) pioneered its application to e-Commerce, demonstrating that online store atmospherics shape affective states and drive purchase behavior. Xiang et al. (2016) demonstrated that social cues in social commerce amplify impulse buying, while Zhang et al. (2022) validated the framework in TikTok Commerce, finding that streamer characteristics and interactive features elicit Emotional Engagement that significantly predicts unplanned purchases. The present study applies the S-O-R Framework to construct a multi-pathway model of IBB in Live Commerce, operationalizing PSI and SC as dual parallel stimuli (S), EE and PU as internal psychological states (O), and IBB as the behavioral response (R). This specification enables simultaneous examination of an affective pathway and a cognitive-urgency pathway, directly addressing the research gap identified by Zheng et al. (2024) calling for multi-stimulus S-O-R models tested in the Southeast Asian Live Commerce context.

2.3 Parasocial Interaction and Hypotheses H1–H2

Parasocial Interaction was first conceptualized by Horton and Wohl (1956), who described the one-sided emotional bonds—characterized by attachment, familiarity, and trust—that media audiences develop toward on-screen personas as though a genuine personal relationship existed. Labrecque (2014) extended PSI to social media, confirming that parasocial bonds with brands and individuals on online platforms exert significant positive effects on consumer attitudes and behavior. PSI is particularly salient in Live Commerce, where real-time responses, personalized recognition, and personal self-disclosure cultivate parasocial bonds more effectively than traditional media (Sun et al., 2019). PSI is operationalized across four dimensions as outlined by Lu et al. (2023): Perceived Intimacy, Perceived Understanding, Parasocial Attachment, and Continuance Desire. The PSI → EE pathway operates through Affective Transfer as parasocial bonds strengthen, viewers become increasingly likely to engage emotionally with streamer-presented content. Zhang et al. (2022) and Lu et al. (2023) corroborate this pattern, supporting H1.

H1: Parasocial Interaction has a positive effect on Emotional Engagement.

PSI also directly triggers IBB through Cialdini's (2001) Liking Principle: when streamers are perceived as trusted friends rather than salespeople and perceived purchase risk decreases. This aligns with Wongkitrungrueng and Assarut (2020), who found PSI's influence on IBB stronger in the Thai cultural context than in Western settings due to Thai consumers' heightened emphasis on personal relationships, supporting H2 of the present study.

H2: Parasocial Interaction has a positive effect on Impulse Buying Behavior.

2.4 Scarcity Appeal and Hypotheses H3–H4

Scarcity Appeal (SC) is grounded in two complementary theories. Commodity Theory (Brock, 1968) holds that humans assign greater value to rare or difficult-to-obtain goods, while Psychological Reactance Theory (Brehm, 1966) posits that perceived threats to freedom of choice activate heightened desire for the restricted item, together accelerating purchase decision-making. Gierl et al. (2008) distinguished two SC forms: Quantity Scarcity, communicating supply limitations, and Time Scarcity, communicating availability deadlines—with Time Scarcity proving more effective in prompting urgent decisions.

In Live Commerce, both forms are deployed simultaneously in real time, consistent with the Real-time Scarcity Visualization framework of Lim et al. (2022), who found real-time scarcity cues significantly more motivating than traditional media formats. The SC → PU pathway is explained through Loss Aversion (Kahneman & Tversky, 1979), whereby the psychological pain of losing an opportunity exceeds the pleasure of an equivalent gain. Aggarwal et al. (2011) confirmed that credible, real-time SC significantly amplifies PU, supporting H3.

H3: Scarcity Appeal has a positive effect on Perceived Urgency.

SC also directly triggers IBB through Automatic Processing (Kahneman, 2011): when scarcity signals are sufficiently intense, consumers respond with immediate unplanned purchases, instant ordering, impulse resistance failure, above-budget spending, post-purchase regret, and habitual unplanned buying. Prior work by Zheng et al. (2024) and Wongthirathana et al. (2022) confirms high Scarcity Cue sensitivity among Thai Gen Z consumers, supporting H4.

H4: Scarcity Appeal has a positive effect on Impulse Buying Behavior.

2.5 Emotional Engagement, Perceived Urgency, and Hypotheses H5–H8

Emotional Engagement (EE) is an internal psychological state grounded in the PAD Model (Mehrabian & Russell, 1974), encompassing Pleasure, Arousal, and Dominance. In Live Commerce, EE manifests as excitement during viewing, energized involvement, Flow Experience—absorption to the point of losing track of time (Csikszentmihalyi, 1990)—satisfaction from streamer interaction, emotional connectedness with the streamer and community, and an overall positive emotional experience, spanning both hedonic and social engagement dimensions (Zhang et al., 2022).

The pathway from EE to IBB is explained by Affect-as-Information Theory (Schwarz & Clore, 1983), whereby positive affect signals individuals to “proceed” without deliberate evaluation—consistent with Xu et al. (2020) and Lu et al. (2023), who demonstrated EE as a significant predictor of IBB through reduced cognitive deliberation, a relationship designated as H5 in the present study.

H5: Emotional Engagement has a positive effect on Impulse Buying Behavior.

Perceived Urgency (PU) is the psychological state in which consumers perceive that a purchase decision must be made immediately before an opportunity is lost (Lim et al., 2022). In Live Commerce, PU spans a felt need to decide quickly, fear of missing out (Przybylski et al., 2013), near-depleted stock perception, countdown timer pressure, social proof from other viewers purchasing, and an overall urgency perception. Through the scarcity-urgency-purchase chain (Zheng et al., 2024), elevated PU reduces deliberative processing and drives unplanned buying—consistent with findings by Lim et al. (2022) and Aggarwal et al. (2011), which form the basis of H6.

H6: Perceived Urgency has a positive effect on Impulse Buying Behavior.

EE and PU operate through fundamentally distinct mechanisms: EE through an affective route driven by Pleasure and Arousal, and PU through a cognitive-urgency route driven by opportunity-loss evaluation. As both PSI and SC retain significant direct effects on IBB alongside their respective mediators, partial mediation is anticipated in both pathways, consistent with Dual Processing Theory (Kahneman, 2011), as formalized in H7 and H8.

H7: Emotional Engagement partially mediates the relationship between Parasocial Interaction and Impulse Buying Behavior.

H8: Perceived Urgency partially mediates the relationship between Scarcity Appeal and Impulse Buying Behavior.

3. RESEARCH METHODS AND MATERIALS

3.1 Population and Sample Selection

This research employed a quantitative survey research design, with data collected via an online questionnaire administered from January through March 2025. The target population consisted of Thai consumers aged 18 years and older who had purchased a product through Live Commerce within the preceding six months. Participants were recruited using snowball sampling distributed through social media channels, yielding a final sample of 400 respondents. This sample size exceeds the minimum threshold of ten times the number of observed variables (34 items) recommended by Hair et al. (2019) for structural equation modeling.

3.2 Research Instruments and Data Collection

All five constructs were measured using five-point Likert scales comprising a total of 34 items, adapted from previously validated instruments as follows: PSI (7 items; Labrecque, 2014; Lu et al., 2023), SC (6 items; Gierl et al., 2008; Lim et al., 2022), EE (6 items; Zhang et al., 2022), PU (6 items; Lim et al., 2022; Zheng et al., 2024), and IBB (9 items; Rook, 1987; Beatty & Ferrell, 1998). Content validity was assessed using the Index of Item-Objective Congruence (IOC) evaluated by a panel of five subject matter experts, with all items achieving IOC values of 0.80 or higher. A pilot test (n = 30) demonstrated acceptable internal consistency, with Cronbach's alpha exceeding 0.84 for all constructs.

3.3 Data Analysis

Data were analyzed using descriptive statistics, Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM) with AMOS Version 28. Construct validity was assessed against established criteria: Average Variance Extracted ($AVE \geq 0.50$), Composite Reliability ($CR \geq 0.70$), and Cronbach's alpha (≥ 0.70), in accordance with the guidelines of Hair et al. (2019). Mediation effects were tested using the Bootstrap Method with 5,000 resamples at the 95% bias-corrected confidence interval.

4. RESULT

4.1 Participant Characteristics

Table 1: Participant Characteristics

Participant Characteristics		Freq.	%
Gender	Male	124	31.0
	Female	257	64.3
	Others	19	4.8
Age (yr)	18–24	114	28.5
	25–34	161	40.3
	35–44	78	19.5
	45–54	37	9.3
	>55	10	2.5
Education	Below Bachelor's	48	12.0
	Bachelor	229	57.3
	Master's	106	26.5
	Doctorate or Higher	17	4.3
Occupation	Students	98	24.5
	Private sector employees	141	35.3
	Government/ State enterprise employees	53	13.3
	Self-employed individuals	58	14.
	Freelancers	32	8.0

Participant Characteristics		Freq.	%
Income (BTHB)	Others	18	4.5
	< 15,000	71	17.8
	15,001–30,000	122	30.5
	30,001–50,000	121	30.3
	50,001–80,000	59	14.8
	>80,000	27	6.8
Platform	TikTok Shop	149	37.3
	Shopee Live	130	32.5
	Facebook Live	94	23.5
	LINE Shopping Live	19	4.8
	Others	8	2.0
Live Commerce viewing /per week.	< 1 time	24	6.0
	1–2 time	121	30.3
	3–4 time	149	37.3
	5–6 time	78	19.5
	>7 time	28	7.0
Total		400	100.0

The sample (n = 400) was predominantly female (64.3%), aged 25–34 (40.3%), with Millennials and Gen Z collectively representing 68.8% of respondents. Most held a bachelor's degree (57.3%) and worked in the private sector (35.3%), with income distributed across middle-income brackets. TikTok Shop was the most-used platform (37.3%), followed by Shopee Live (32.5%) and Facebook Live (23.5%). Notably, 63.8% reported viewing Live Commerce three or more times per week, indicating habitual exposure to the PSI- and SC-driven stimuli examined in this study.

Table 2: Descriptive Statistics of Research Variables

Indicator	Question	Mean	SD	Level
PSI1	The streamer feels like a close friend I know well	3.56	0.89	High
PSI2	I feel the streamer understands my needs and preferences	3.60	0.86	High
PSI3	I feel as though I am talking with someone I know while watching the Live	3.60	0.87	High
PSI4	I am interested in following the streamer's life and activities	3.53	0.87	High
PSI5	I feel concerned about the streamer when they have problems	3.54	0.83	High
PSI6	I feel disappointed when I miss a Live session	3.58	0.85	High
PSI7	I feel more attached to this streamer than to other sellers	3.56	0.84	High
Parasocial Interaction (PSI)		3.566	0.710	High
SC1	The message “only a few items left” motivates me to buy	3.72	0.88	High
SC2	Real-time inventory displays accelerate my purchase decisions	3.75	0.81	High
SC3	Limited-quantity promotions make me rush to place an order	3.75	0.84	High
SC4	Countdown timers create urgency in my decision-making	3.75	0.86	High
SC5	Special prices expiring within minutes prompt me to buy immediately	3.73	0.85	High
SC6	The message “Live-exclusive pricing” increases my interest	3.65	0.85	High
Scarcity Appeal (SC)		3.723	0.699	High
EE1	I feel excited and entertained while watching Live Commerce	3.52	0.83	High
EE2	I feel engaged and energized while watching the streamer	3.62	0.87	High
EE3	I become so absorbed in the Live Commerce atmosphere that I lose track of time	3.59	0.87	High
EE4	I feel satisfied when interacting with the streamer	3.62	0.90	High

Indicator	Question	Mean	SD	Level
EE5	I feel emotionally connected to the streamer and fellow viewers	3.62	0.86	High
EE6	Live Commerce creates a positive emotional experience for me	3.60	0.84	High
Emotional Engagement (EE)		3.595	0.719	High
PU1	I feel I must make a purchase decision quickly while watching the Live	3.53	0.89	High
PU2	I feel that if I don't buy now, I will miss the opportunity	3.52	0.88	High
PU3	The feeling that stock is running out makes me decide faster	3.56	0.90	High
PU4	I feel time pressure when I see a countdown timer	3.52	0.90	High
PU5	Seeing many other viewers buying makes me want to buy as well	3.52	0.88	High
PU6	Live Commerce creates a sense of urgency in my purchase decisions	3.51	0.93	High
Perceived Urgency (PU)		3.527	0.764	High
IB1	I often buy products without prior planning while watching a Live session	3.29	0.97	Moderate
IB2	I purchase products even though I had no intention to before opening the Live	3.31	0.93	Moderate
IB3	When I see an interesting product in a Live session, I tend to order it immediately	3.31	0.98	Moderate
IB4	I often feel excited and make quick purchase decisions during Live Commerce	3.27	0.96	Moderate
IB5	It is difficult for me to resist interesting products presented during a Live session	3.32	1.00	Moderate
IB6	I have purchased products above my budget due to impulses during a Live session	3.33	0.94	Moderate
IB7	I have felt regret after unintentionally purchasing a product from a Live session	3.33	0.90	Moderate
IB8	I feel that I buy from Live Commerce more often than I should	3.35	0.95	Moderate
IB9	I tend to buy products without planning whenever I watch a Live session	3.33	0.96	Moderate
Impulse Buying Behavior (IBB)		3.316	0.812	Moderate
Note: Significant = M 3.50–4.49, Moderate = M 2.50–3.49 (Best, 1977)				

4.2 Confirmatory Factor Analysis (CFA) Results

Interpretation: All $\sqrt{\text{AVE}}$ values exceed their respective inter-construct correlations, confirming discriminant validity for all five constructs. Notably, the PSI–EE correlation (0.581) remains below $\sqrt{\text{AVE}}(\text{PSI}) = 0.716$ and $\sqrt{\text{AVE}}(\text{EE}) = 0.728$, indicating that despite their conceptual proximity, PSI and EE are empirically distinct constructs.

Table 3: Convergent Validity Summary and Discriminant Validity

Convergent Validity Summary and $\sqrt{\text{AVE}}$ Values						Discriminant Validity/ Fornell-Larcker Criterion				
Construct	AVE	$\sqrt{\text{AVE}}$	CR	α	FL Pass?	PSI	SC	EE	PU	IBB
PSI	0.512	0.716	0.881	0.923	✓	[0.716]				
SC	0.541	0.736	0.900	0.903	✓	0.312	[0.736]			
EE	0.529	0.727	0.883	0.912	✓	0.581	0.293	[0.727]		
PU	0.558	0.747	0.903	0.924	✓	0.284	0.634	0.412	[0.747]	
IBB	0.573	0.757	0.930	0.952	✓	0.521	0.548	0.576	0.543	[0.757]
Note: $\sqrt{\text{AVE}}$ = square root of Average Variance Extracted. Values in bold represent $\sqrt{\text{AVE}}$ used in the						Note: Diagonal elements (bold, green) represent the square root of AVE ($\sqrt{\text{AVE}}$). Off-				

<i>Fornell-Larcker criterion. AVE ≥ 0.50, CR ≥ 0.70 (Hair et al., 2019; Fornell & Larcker, 1981).</i>	<i>diagonal elements represent inter-construct correlations. Discriminant validity is established when $\sqrt{AVE} >$ all inter-construct correlations in the corresponding row and column (Fornell & Larcker, 1981).</i>
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As shown in Table 4, all five constructs demonstrated adequate convergent validity and internal consistency, with factor loadings (0.688–0.774), AVE (0.512–0.573 ≥ 0.50), CR (0.881–0.930 ≥ 0.70), and Cronbach's alpha (0.903–0.952 ≥ 0.70) all satisfying established acceptance criteria (Hair et al., 2019), supporting the validity of the measurement model for subsequent structural analysis.

Table 4 CFA Results — Validity and Reliability Indices

Variable	Number of Indicator	AVE	CR	α	Result
Parasocial Interaction (PSI)	7	0.512	0.881	0.923	Passed
Scarcity Appeal (SC)	6	0.541	0.900	0.903	Passed
Emotional Engagement (EE)	6	0.529	0.883	0.912	Passed
Perceived Urgency (PU)	6	0.558	0.903	0.924	Passed
Impulse Buying Behavior (IBB)	9	0.573	0.930	0.952	Passed
Note: Acceptance criteria — AVE ≥ 0.50 , CR ≥ 0.70 , $\alpha \geq 0.70$ (Hair et al., 2019)					

4.3 Hypothesis Testing: Structural Equation Modeling (SEM)

The SEM demonstrated excellent fit with the empirical data ($\chi^2/df = 1.428$, CFI = 0.974, TLI = 0.971, IFI = 0.974, NFI = 0.941, RMSEA = 0.033, SRMR = 0.048), with all indices satisfying the acceptance criteria established by Hair et al. (2019). Hypothesis testing results are presented in Table 5.

Table 5: Hypothesis Testing Results — Standardized Path Coefficients

H	เส้นทาง	β	S.E.	C.R.	p	Result
H1	PSI $\rightarrow$ EE	0.581	0.048	12.10	***	Supported
H2	PSI $\rightarrow$ IBB	0.238	0.052	4.58	***	Supported
H3	SC $\rightarrow$ PU	0.634	0.044	14.41	***	Supported
H4	SC $\rightarrow$ IBB	0.291	0.056	5.20	***	Supported
H5	EE $\rightarrow$ IBB	0.347	0.058	5.98	***	Supported
H6	PU $\rightarrow$ IBB	0.312	0.055	5.67	***	Supported
Note: *** $p < .001$; β = standardized path coefficient; S.E. = standard error; C.R. = critical ratio						

4.4 Mediation Analysis

Mediation effects were tested using the Bootstrap Method with 5,000 resamples. Results are presented in Table 6.

Table 6 ผลการวิเคราะห์ Mediation: อิทธิพลทางอ้อมผ่าน Bootstrap Method

Mediated Path	Indirect	Direct	Total	LL 95%CI	UL 95%CI	Type
H7: PSI $\rightarrow$ EE $\rightarrow$ IBB	0.202	0.238	0.440	0.121	0.283	Partial
H8: SC $\rightarrow$ PU $\rightarrow$ IBB	0.198	0.291	0.489	0.118	0.278	Partial
Note: Neither 95% bias-corrected confidence interval includes zero, confirming that both indirect effects are statistically significant. Partial = Partial Mediation.						

Both mediation hypotheses were supported. EE significantly mediated the PSI $\rightarrow$ IBB relationship (indirect effect = 0.202, 95% BC CI [0.121, 0.283]), and PU significantly mediated the SC $\rightarrow$ IBB relationship (indirect effect = 0.198, 95% BC CI [0.118, 0.278]). As both direct effects remained significant after mediation (PSI $\rightarrow$ IBB: $\beta = 0.238$; SC $\rightarrow$ IBB: $\beta = 0.291$), partial mediation is confirmed for H7 and H8, indicating that IBB arises simultaneously through an affective route (PSI $\rightarrow$ EE $\rightarrow$ IBB) and a cognitive-urgency route (SC $\rightarrow$ PU $\rightarrow$ IBB).

5. DISCUSSION AND CONCLUSION

5.1 Discussion

5.1.1 The Influence of Scarcity Appeal on Perceived Urgency and Impulse Buying Behavior

SC exerted the strongest positive effect on PU in the model ($\beta = 0.634$, $p < .001$), supporting H3 and exceeding the estimate reported by Lim et al. (2022) in social commerce ($\beta \approx 0.58$). This difference reflects the intensive real-time scarcity visualization characteristic of Live Commerce—declining inventory displays, countdown timers, and Live-exclusive messaging—which renders scarcity evidence more credible and concrete than in traditional media. Prior work by Brehm (1966) confirms that tangible, verifiable threats to freedom of choice elicit stronger Psychological Reactance than unverifiable general claims. SC also exerted a significant direct effect on IBB ($\beta = 0.291$, $p < .001$), supporting H4, indicating that real-time scarcity cues trigger impulse buying not only through urgency cognition but also directly via Automatic Processing, wherein Loss Aversion (Kahneman & Tversky, 1979) drives purchase behavior without deliberate evaluation—consistent with Zheng et al. (2024), who identified SC as the strongest predictor of IBB in a Live Commerce S-O-R model.

5.1.2 The Influence of Parasocial Interaction on Emotional Engagement and Impulse Buying Behavior

PSI exerted a strong positive effect on EE ($\beta = 0.581$, $p < .001$), supporting H1 and representing the second-highest path coefficient in the model. This estimate exceeds that of Yuan et al. (2021) in e-sport streaming ($\beta = 0.38$) and approximates Lu et al. (2023) in Asian Live Commerce ($\beta = 0.52$). The elevated effect size likely reflects Thailand's high-context cultural orientation, which Wongkitrungrueng and Assarut (2020) characterized as placing greater emphasis on personal relationships and trust than Western contexts, enabling parasocial bonds to convert more readily into Emotional Engagement. This aligns with Affective Transfer Theory, whereby emotional bonds with a source transfer to evaluations of the source's content and subsequent behavioral responses. PSI also exerted a significant direct effect on IBB ($\beta = 0.238$, $p < .001$), supporting H2, explained through Cialdini's (2001) Liking Principle: when a streamer is perceived as a trusted friend rather than a salesperson, pre-purchase risk evaluation decreases and impulse buying likelihood increases accordingly.

5.1.3 The Relative Influence of Emotional Engagement and Perceived Urgency on Impulse Buying Behavior

EE ($\beta = 0.347$, $p < .001$) exerted a slightly stronger effect on IBB than PU ($\beta = 0.312$, $p < .001$). Although modest, this directional difference carries theoretical significance: in the Thai Live Commerce context, the affective route carries greater weight than the cognitive-urgency route. Xu et al. (2020) found that entertainment atmospherics exert stronger influence on IBB than informational atmospherics, confirming the hedonic character of Live Commerce relative to conventional e-Commerce where utilitarian motivation predominates—and with Holbrook and Hirschman (1982), who argued that emotion-driven hedonic consumption is more conducive to impulse buying than reason-driven utilitarian consumption. Notably, although SC is the strongest predictor of PU, PSI operating through EE yields a stronger aggregate effect on IBB when direct and indirect pathways are combined.

5.1.4 The Role of Partial Mediation and Corroboration of Dual Processing Theory

Mediation analysis confirmed EE as a significant partial mediator between PSI and IBB (indirect effect = 0.202, 95% BC CI [0.121, 0.283]) and PU as a significant partial mediator between SC and IBB (indirect effect = 0.198, 95% BC CI [0.118, 0.278]), supporting H7 and H8. The retained significance of both direct effects—PSI ($\beta = 0.238$) and SC ($\beta = 0.291$)—on IBB confirms that impulse buying in Live

Commerce arises from both Automatic Processing (System 1), driven by affective bonding, and more deliberative processing (System 2), driven by opportunity-loss evaluation, consistent with Dual Processing Theory (Kahneman, 2011). For the first time in the Thai context, both routes operated simultaneously and complementarily, with neither pathway dominating the other.

5.1.5 Theoretical Implications

Three theoretical implications emerge. First, the excellent model fit ($\chi^2/df = 1.428$, CFI = 0.974, TLI = 0.971, RMSEA = 0.033) confirms that the S-O-R Framework (Mehrabian & Russell, 1974) retains strong explanatory power in real-time interactive digital commerce environments, extending its applicability to the Thai Live Commerce context.

Second, the first-time integration of PSI Theory (Horton & Wohl, 1956; Labrecque, 2014) with Scarcity Theory (Brock, 1968; Brehm, 1966) within a unified S-O-R framework reveals that PSI and SC operate through fundamentally distinct mechanisms— affective bonding that accumulates during viewing versus urgency cognition that arises immediately upon scarcity perception—yet both converge on IBB.

Third, the partial mediation pattern across both pathways contributes empirical evidence from Southeast Asia in support of Dual Processing Theory (Kahneman, 2011), directly addressing the research gap identified by Zheng et al. (2024) calling for multi-pathway IBB models tested within this regional context.

5.2 Conclusion

The empirical results of this research confirm that Parasocial Interaction (PSI) and Scarcity Appeal (SC) function as potent dual stimuli within the Stimulus-Organism-Response (S-O-R) Framework, effectively driving Impulse Buying Behavior (IBB) in the Thai Live Commerce landscape. The validated model demonstrates that these external triggers do not influence behavior in isolation but are processed through internal psychological states, specifically Emotional Engagement (EE) and Perceived Urgency (PU). By successfully integrating Parasocial Interaction Theory and Scarcity Theory into a unified multi-pathway model, this study provides a comprehensive understanding of the affective and cognitive mechanisms that lead to unplanned purchases in real-time interactive digital environments.

The theoretical contribution of this work lies in the confirmation of a parallel partial mediation structure, which lends significant empirical weight to Dual Processing Theory within the Southeast Asian context. The findings reveal that impulse buying arises simultaneously through an affective route, where emotional bonds with streamers enhance engagement, and a cognitive-urgency route, where the visualized threat of losing an opportunity accelerates decision-making. This dual-process mechanism suggests that the traditional S-O-R Framework retains strong explanatory power even in the highly dynamic and socially-driven atmosphere of Live Commerce, provided it accounts for both the relational and informational aspects of the shopping experience.

Beyond theoretical advancement, the study offers actionable implications for practitioners navigating the competitive Thai market. For streamers and digital marketers, the results highlight the necessity of balancing rapport-building activities with strategic scarcity cues to maximize consumer response. While TikTok Shop and Shopee Live currently dominate the market through distinct activation mechanisms, the underlying psychological drivers remain consistent across platforms. Therefore, creating a positive emotional atmosphere and a sense of genuine connection is just as vital as implementing countdown timers or exclusive pricing. These insights allow for the development of more effective and ethically grounded Live Commerce strategies that align with the high-context cultural preferences of Thai consumers.

6. LIMITATION AND DIRECTION FOR FUTURE RESEARCH

Three primary limitations should be acknowledged. First, snowball sampling may have introduced bias toward technology-familiar consumers, limiting generalizability. Second, the cross-sectional design precludes definitive causal inference. Third, theoretically relevant moderators—including self-control trait, materialism, and brand trust—were not incorporated.

Future research should pursue four directions: (1) longitudinal studies tracking PSI development over time; (2) multi-group analysis across platforms and age cohorts; (3) cross-cultural replication in Vietnam, Indonesia, and Malaysia to assess model generalizability; and (4) investigation of AI-powered streamers' capacity to generate PSI and EE comparable to human streamers, and how awareness of a streamer's artificial nature moderates scarcity-driven impulse buying.

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