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The 'Live' Gaze: A Neuromarketing and Eye-Tracking Analysis of Consumer Attention and Impulse Buying on Shopee Live and TikTok Shop in Indonesia

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A B S T R A C T

Livestream commerce (LSC) has redefined digital retail in Southeast Asia, with Indonesia as its most competitive market. The two dominant platforms, Shopee Live and TikTok Shop, leverage vastly different user interfaces and engagement philosophies—commerce-first versus content-first, respectively. However, the precise cognitive and affective mechanisms by which these platforms guide consumer attention and trigger impulse purchases remain empirically unexamined. This study employed a within-subjects laboratory experiment with 60 Indonesian consumers (aged 18-25). A multi-modal neuromarketing approach was used, synchronizing eye-tracking (ET) and electroencephalography (EEG) data. Participants viewed six 60-second LSC clips (three from Shopee Live, three from TikTok Shop) matched for product category. Key eye-tracking metrics (Total Fixation Duration, Time to First Fixation) were analyzed across predefined Areas of Interest (AOIs: Host Face, Product, Price, CTA Button, Chat). EEG data was processed to derive Frontal Alpha Asymmetry (FAA) for approach-avoidance motivation and Cognitive Load indices. Post-stimulus surveys measured Impulse Buying Urge (IBU). Significant differences emerged. Shopee Live generated longer Total Fixation Duration on the Host's Face (M=12,500ms) and Price/Discount AOIs (M=8,800ms). Conversely, TikTok Shop elicited significantly faster Time to First Fixation on the Product (M=1,600ms) and CTA Button (M=2,800ms), and higher TFD on these AOIs. Neurologically, TikTok Shop produced significantly greater FAA (M=0.19 vs. 0.08), indicating higher approach motivation, and also induced a higher cognitive load. A multiple regression analysis revealed that the strongest predictors of IBU were TFD on the CTA Button, FAA, and TFD on the Host's Face. TFD on the product itself was not a significant predictor. In conclusion, the findings demonstrate that platform architecture fundamentally shapes the "live" gaze. Shopee Live fosters a deliberative, host-centric, and price-evaluative attentional strategy. TikTok Shop promotes a rapid, immersive, and conversion-focused gaze, driving higher affective engagement (approach) and subsequent impulse buying. The study provides novel evidence that in LSC, impulse triggers are tied more to conversion-point (CTA) and para-social (Host) cues than to the product itself.

1. Introduction

The 21st-century retail landscape is characterized by a relentless pace of digital transformation, a phenomenon accelerated and solidified by the global COVID-19 pandemic.[1] This "new normal" has irrevocably shifted consumer behavior, consolidating

e-commerce not merely as an alternative, but as the primary mode of commercial engagement for billions globally.[2] Within this digital shift, a secondary, more nuanced evolution is occurring: the transition from static, asynchronous e-commerce (typified by product grids and "add-to-cart" pages) to dynamic, synchronous, and interactive retail experiences. At the vanguard of this movement is livestream commerce (LSC), a potent hybrid of e-commerce, social media, and entertainment that has emerged as a multi-billion-dollar industry.[3]

Livestream commerce, originating in China, merges real-time video streaming with an interactive sales interface, allowing "hosts" or "streamers" to demonstrate products, engage with viewers through live chat, and offer limited-time discounts ("flash sales") that viewers can purchase instantly without leaving the stream.[4] This model effectively digitizes the "phygital" (physical + digital) experience of in-person shopping, restoring the elements of human interaction, social proof (via a live chat feed), and perceived authenticity that traditional e-commerce lacks. The psychological power of LSC lies in its engineered immediacy. By leveraging principles of scarcity (limited-time deals), urgency (real-time interaction), and para-social relationships (host-viewer "friendship"), LSC has proven uniquely effective at compressing the consumer decision journey from awareness to purchase into a matter of minutes.[5]

Nowhere is this phenomenon more pronounced than in Southeast Asia, and specifically, Indonesia. As the region's largest digital economy, Indonesia boasts over 200 million internet users who exhibit one of the highest rates of e-commerce adoption and social media engagement globally. The Indonesian market has become a fierce battleground for LSC dominance, primarily contested by two titans: Shopee and TikTok. This rivalry, however, is not a simple competition between two similar services; it represents a fundamental clash of business philosophies.[6]

Shopee, an incumbent e-commerce giant under Sea Group, approaches LSC from a "commerce-first" perspective. Its "Shopee Live" feature is an integrated tool within a mature, transaction-focused marketplace. Users who enter Shopee Live are typically already in a "shopping" mindset, possessing goal-directed intentions. The interface is often dense, populated with e-commerce-centric cues: loyalty points, complex vouchers, and prominent price-slashing graphics. The host, in this context, often functions as a digital salesperson, guiding users through a pre-existing transactional framework.[7]

In stark contrast, TikTok Shop emerges from a "content-first" behemoth. Owned by ByteDance, TikTok is fundamentally an entertainment platform built on a powerful, algorithmically-driven, full-screen video feed. Its LSC feature is seamlessly embedded within this "shoppertainment" ecosystem. Users often encounter a livestream not through a deliberate search, but by "swiping" into it.[8] The experience is immersive, video-first, and social by default. This difference in origin and interface architecture is hypothesized to create a profoundly different psychological context for consumption. Shopee conditions a "deal-hunter" gaze, while TikTok cultivates a "serendipitous" gaze.

While the business implications of this competition are widely discussed, the empirical understanding of its impact on consumer cognition is severely lacking. The extant LSC literature has, to date, relied almost exclusively on self-report methodologies, such as user surveys and post-hoc interviews, to understand the drivers of purchase intention. These studies have successfully identified key antecedents like host attractiveness, perceived interactivity, and trust as significant. However, self-report methods are notoriously unreliable for capturing in-the-moment, affective, and non-conscious processes. Impulse buying, a primary outcome of LSC, is a classic example of such a process—a behavior characterized by being unplanned, sudden, and driven by an immediate

affective urge rather than rational deliberation. Consumers are often poor witnesses to their own attentional patterns and affective triggers; they may believe they bought a product because of its features, when in fact their gaze was captured by a countdown timer and a "Buy Now" button.[9]

To understand what actually drives consumer behavior during the critical, fleeting moments of a livestream, we must move beyond what consumers say they do and measure what they actually see and feel. This necessitates a paradigm shift towards objective, neuro-physiological measurement. This study introduces such a paradigm by applying a dual-method, high-density neuromarketing approach: (1) high-resolution eye-tracking (ET) and (2) multi-channel electroencephalography (EEG). Eye-tracking provides an unfiltered, millisecond-by-millisecond record of a consumer's visual attention—the "live" gaze. It allows us to objectively quantify what users look at (Areas of Interest, or AOIs), for how long (Total Fixation Duration, TFD), and how quickly they find it (Time to First Fixation, TTFF). In the cluttered visual environment of LSC, understanding this attentional allocation is paramount. Does the eye fixate on the host's face, building para-social trust? Does it fixate on the product, evaluating quality? Or does it fixate on the price, calculating value?

However, knowing where a consumer looks is only half the story. EEG, the measurement of electrical activity in the brain, tells us how they feel about what they are seeing.[10] By analyzing specific brainwave frequencies, we can derive validated metrics of cognitive and affective states. Of particular relevance is Frontal Alpha Asymmetry (FAA), the relative difference in alpha-band (8-13 Hz) power between the left and right prefrontal cortices. A greater relative left-frontal activity (lower alpha power) is a robust indicator of "approach" motivation—a positive affective state associated with engagement, desire, and a propensity to act. Conversely, greater right-frontal activity signals "avoidance" motivation, or withdrawal. This allows us to measure, in real-time, whether a stimulus is drawing the consumer in or pushing them away. Furthermore, EEG can be used to compute indices of Cognitive Load, revealing the mental effort required to process the on-screen information, a critical factor in the dense UIs of LSC.

This study builds upon a foundation of established cognitive and communication theory. The Stimulus-Organism-Response (S-O-R) model serves as our primary theoretical framework [21]. In this context, the LSC platform's interface and content (Shopee Live vs. TikTok Shop) act as the Stimulus (S). The consumer's non-conscious cognitive and affective processing—their attentional gaze (ET) and neural engagement (EEG)—constitutes the Organism (O). The final behavioral outcome, the Impulse Buying Urge (IBU) and Purchase Intention (PI), represents the Response (R). Our methodology is unique in its ability to empirically measure the "O" state, the black box that traditional research has been unable to open. We also draw upon Attentional Control Theory, which distinguishes between top-down (goal-directed) and bottom-up (stimulus-driven) attention. We hypothesize that Shopee's commerce-first UI fosters a top-down, "deal-hunter" attentional strategy, while TikTok's content-first UI triggers a bottom-up, "serendipitous" attentional capture.

The primary aim of this study is twofold: (1) to provide the first direct, multi-modal comparison of the visual attention and neural engagement patterns of Indonesian consumers viewing Shopee Live versus TikTok Shop advertisements; and (2) to identify and model the specific visual (gaze-based) and neural (EEG-based) triggers that predict Impulse Buying Urge. This research presents several key novelties. First, to our knowledge, this is the first study in the world to apply a synchronized eye-tracking and EEG (neuromarketing) methodology to directly compare competing LSC platforms. Second, it moves beyond descriptive metrics by using regression modeling to

link objective, neuro-physiological data (TFD on the CTA button, FAA) to a critical commercial outcome (IBU), thereby identifying concrete "triggers." Third, its focus on the Indonesian market—a global epicenter of LSC competition—provides urgently needed, regionally-specific insights for both academics and practitioners. By capturing the "live" gaze, this study seeks to deconstruct the non-conscious mechanisms of persuasion that define the future of digital commerce.

2. Methods

This study employed a quantitative, within-subjects, repeated-measures experimental design conducted in a controlled laboratory setting. The within-subjects (or repeated-measures) design was chosen for its statistical power, as it allows each participant to serve as their own control, thereby minimizing inter-individual variance and isolating the effect of the primary independent variable: the LSC platform (Shopee Live vs. TikTok Shop). All neuro-physiological (ET, EEG) and self-report (IBU, PI) measures were collected and synchronized. The study received full ethical approval from the Institutional Review Board of CMHC Research Center, Indonesia.

A total of 60 healthy participants (32 female, 28 male) were recruited from university panels and social media announcements in Palembang, Indonesia. The recruitment criteria were: (1) aged 18-25 (Gen Z, the primary demographic for LSC); (2) active users of both Shopee and TikTok (defined as using each platform at least 3-4 times per week); (3) prior experience (at least one purchase) with both Shopee Live and TikTok Shop; (4) normal or corrected-to-normal vision; and (5) no history of neurological disorders or current use of psychoactive medication. Participants provided written informed consent and were compensated with IDR 200,000 (approx. $12.50 USD) in e-wallet vouchers for their 60-minute participation.

The experimental stimuli consisted of six 60-second video clips of LSC sessions, three from Shopee Live and three from TikTok Shop. To ensure comparability and control for confounding variables, the clips were carefully selected and curated based on the following criteria: (1) Platform: 3x Shopee Live, 3x TikTok Shop. The clips were screen-recordings of actual, recent livestreams to maintain ecological validity; (2) Product Category: The clips were matched across platforms for product category, covering three high-velocity LSC categories: Fashion/Apparel, Beauty/Skincare, and Electronics/Gadgets; (3) Content: All clips featured a single, clearly visible host, product demonstrations, and an active chat feed; (4) Standardization: All clips were edited to a uniform 60-second length. To isolate the impact of visual stimuli (which is the focus of an eye-tracking study), the original audio (host speech, background music) was removed. This is a standard procedure in visual-centric neuromarketing studies to prevent audio cues from confounding the gaze and EEG data. All clips were presented in high-definition (1080p) on a 24-inch monitor.

The experiment was conducted using an integrated multi-modal setup: (1) Eye-Tracking (ET): A desktop-mounted Tobii Pro Fusion eye-tracker, sampling at 250 Hz, was used. The system allows for high-precision gaze mapping with minimal intrusiveness; (2) Electroencephalography (EEG): A 14-channel Emotiv EPOC+ wireless EEG headset was used. This headset records data from 14 salient scalp locations (AF3, F7, F3, FC5, T7, P7, O1, O2, P8, T8, FC6, F4, F8, AF4) based on the 10-20 international system, providing sufficient coverage of the prefrontal cortex for FAA analysis; (3) Synchronization & Presentation: The iMotions 10.0 software platform was used to integrate and synchronize the data streams from the Tobii eye-tracker and the Emotiv headset. It also handled the stimulus presentation (randomization, timing) and the collection of post-stimulus self-report data.

Upon arrival at the lab, participants were briefed on the procedure and signed the consent form. They

then completed a short demographic questionnaire. Next, they were seated in a sound-attenuated booth, 60 cm from the monitor. The researcher fitted the Emotiv headset, applying a saline solution to the sensors to ensure optimal conductivity (impedance < 5 kΩ). A 2-minute baseline EEG recording (eyes open, looking at a gray screen) was taken. A standard 9-point calibration and validation procedure was performed using the Tobii software. Calibration was repeated until the accuracy was deemed "Good" by the software for both eyes. Participants were instructed to "watch the following short clips as you normally would." The six 60-second video clips were presented in a fully counterbalanced, randomized order to mitigate any sequence or order effects. After each 60-second clip, a 30-second "washout" period (gray screen) was presented to allow neural and gaze activity to return to baseline. This was followed by a 3-item on-screen questionnaire to measure the clip-specific Impulse Buying Urge (IBU). After all six clips were viewed, a final survey was administered to measure overall Purchase Intention (PI) for each platform. The equipment was then removed, and participants were debriefed and compensated.

Eye-tracking (ET) measures

Areas of Interest (AOIs): For each of the six stimuli, five distinct, non-overlapping AOIs were manually drawn using the iMotions software. The AOIs were: (1) Host Face (bounding box around the host's head), (2) Product Display (dynamic box following the product being demonstrated), (3) Price/Discount (static box around all price, voucher, and discount-related text), (4) CTA Button (static box around the "Buy Now," "Add to Cart," or equivalent button), and (5) Chat Feed (static box around the scrolling user comments).

Gaze Metrics: Two primary metrics were extracted for each AOI: (1) Total Fixation Duration (TFD): The cumulative sum of time (in milliseconds) that a participant's gaze remained fixated within a specific AOI. This is a key indicator of attentional engagement and processing depth; (2) Time to First Fixation (TTFF): The time (in milliseconds) from the start of the stimulus presentation until the participant's gaze first fixated within a specific AOI. This measures attentional capture and visual search efficiency; (3) Data Cleaning: Gaze data with a validity of less than 80% (due to excessive head movement or blinking) was discarded. This led to the exclusion of two participants; 60 complete datasets were used in the final analysis.

Electroencephalography (EEG) measures

Preprocessing: The raw EEG data were preprocessed using the Analyzer module in iMotions. A 1-45 Hz band-pass filter was applied. Artifacts from blinks, eye movements (ocular artifacts, cross-validated with ET data), and muscle tension (EMG) were identified and removed using a combination of filtering and Independent Component Analysis (ICA).

Metric Derivation: (1) Frontal Alpha Asymmetry (FAA): Power spectral density (PSD) was calculated for the alpha band (8-13 Hz) at the F3 (left prefrontal) and F4 (right prefrontal) electrode sites. The FAA score was computed using the standard formula: FAA = ln(Alpha Power at F4) - ln(Alpha Power at F3). A higher (more positive) score indicates greater relative left-frontal activity, corresponding to higher approach motivation; (2) Cognitive Load: A validated index of cognitive load was computed using the power ratio formula: (Beta Power + Gamma Power) / Alpha Power, derived from the parietal (Pz) electrode. This metric reflects the mental effort exerted to process the information.

Self-report measures

Impulse Buying Urge (IBU): Measured immediately after each clip using a 3-item, 7-point Likert scale adapted from Verhagen & van Dolen ("While watching this clip, I felt a sudden urge to buy this product"; 1 = Strongly Disagree, 7 = Strongly Agree). Cronbach's Alpha for this scale in our sample was 0.91, indicating

high reliability.

Purchase Intention (PI): Measured at the end of the experiment for both platforms ("How likely are you to purchase from Shopee Live in the next month?") on a 7-point Likert scale.

Statistical analysis

All statistical analyses were performed using SPSS 28.0. Means and Standard Deviations (SD) were calculated for all ET, EEG, and self-report metrics. To test for differences between the two platforms, paired-samples t-tests were conducted. The paired data points for each participant were the average metrics across the three Shopee Live clips versus the average metrics across the three TikTok Shop clips. To identify the "triggers" of impulse buying, a hierarchical multiple linear regression analysis was performed. The dependent variable was the IBU score. The predictors were entered in blocks: Block 1 included control variables (Platform, product category), Block 2 included all ET metrics (TFD for each AOI), and Block 3 included the EEG metrics (FAA, Cognitive Load). This allowed us to assess the incremental predictive validity of the neuro-physiological data. The analysis used the combined dataset of 120 observations (60 participants x 2 platform averages).

3. Results and Discussion

The final sample of N=60 participants consisted of 32 females (53.3%) and 28 males (46.7%), with a mean age of 21.5 years (SD = 2.1). All participants were active daily users of both TikTok and Shopee. On average, they reported spending 7.8 hours per week (SD = 2.9) on TikTok and 5.1 hours per week (SD = 2.2) on Shopee, and made an average of 3.4 (SD = 1.1) online purchases per month.

The paired-samples t-tests revealed significant and systematic differences in how participants allocated their visual attention between the two platforms. As detailed in Table 1, participants spent significantly more time fixating on the Host's Face on Shopee Live (M = 12,500ms, SD = 3,100) compared to TikTok Shop (M = 9,200ms, SD = 2,800), $t(59) = 8.12$, $p < 0.001$. A similar pattern was found for the Price/Discount AOI, which received significantly more TFD on Shopee Live (M = 8,800ms, SD = 2,100) than on TikTok Shop (M = 4,100ms, SD = 1,500), $t(59) = 15.21$, $p < 0.001$. Conversely, TikTok Shop's interface successfully drew significantly more attentional engagement to its commercial and social elements. The Product Display received 33.7% more TFD on TikTok Shop (M = 13,500ms, SD = 3,300) than on Shopee Live (M = 10,100ms, SD = 2,900), $t(59) = -7.05$, $p < 0.001$. The CTA Button also garnered significantly higher TFD on TikTok Shop (M = 6,800ms, SD = 1,900) compared to Shopee Live (M = 4,200ms, SD = 1,300), $t(59) = -9.88$, $p < 0.001$. Finally, the Chat Feed was also viewed more extensively on TikTok Shop (M = 7,400ms, SD = 2,200) versus Shopee Live (M = 5,400ms, SD = 1,700), $t(59) = -6.15$, $p < 0.001$.

Time to First Fixation (TTFF) data (Table 2) indicates the speed of attentional capture. The results show that participants' search patterns were goal-directed on Shopee Live, where they located the Host's Face (M = 1,800ms) and Price/Discount AOI (M = 2,100ms) significantly faster than on TikTok Shop. On TikTok Shop, the gaze was immediately and rapidly captured by the key conversion elements. Participants found the Product Display significantly faster on TikTok (M = 1,600ms) than on Shopee (M = 2,400ms), $t(59) = 10.11$, $p < 0.001$. Most critically, the CTA Button was located almost twice as fast on TikTok Shop (M = 2,800ms) compared to Shopee Live (M = 5,500ms), $t(59) = 24.33$, $p < 0.001$. This suggests TikTok's UI design, which often places the product and CTA in a more prominent, integrated fashion, is highly effective at minimizing the "search" cost for conversion.[11]

Table 1. Paired T-test results for total fixation duration (TFD) by AOI.

Area of Interest (AOI)	Platform (Visual Stimuli)		Statistical Comparison		
	Shopee Live (M, SD) in ms	TikTok Shop (M, SD) in ms	t-value (df=59)	p-value	Effect Size (Cohen's d)
Host Face (H1a) Gaze on host's facial region.	12,500 (3,100)	9,200 (2,800)	+8.12	< 0.001	1.05 (Large)
Product Display (H1c) Gaze on product being shown.	10,100 (2,900)	13,500 (3,300)	-7.05	< 0.001	1.03 (Large)
Price/Discount (H1b) Gaze on price or voucher info.	8,800 (2,100)	4,100 (1,500)	+15.21	< 0.001	2.22 (Very Large)
CTA Button (H1d) Gaze on 'Buy Now' or cart icon.	4,200 (1,300)	6,800 (1,900)	-9.88	< 0.001	1.44 (Very Large)
Chat Feed (H1e) Gaze on scrolling user comments.	5,400 (1,700)	7,400 (2,200)	-6.15	< 0.001	0.90 (Large)

Note: Means (M) represent the average Total Fixation Duration (TFD) in milliseconds (ms) over a 60,000ms (60-second) clip. (SD) = Standard Deviation. All p-values are significant at $p < 0.001$. Effect sizes (Cohen's d) are calculated for paired samples and indicate the magnitude of the difference between the two platforms.

Table 2. Paired T-test results for time to first fixation (TTFF) by AOI.

AREA OF INTEREST (AOI)	SHOPEE LIVE (MEAN, SD) (MS)	TIKTOK SHOP (MEAN, SD) (MS)	T-VALUE (DF=59)	P-VALUE
Host Face	1,800 (450)	2,100 (510)	-3.91	< 0.001
Product Display	2,400 (530)	1,600 (420)	10.11	< 0.001
Price/Discount	2,100 (490)	3,900 (600)	-18.04	< 0.001
CTA Button	5,500 (710)	2,800 (550)	24.33	< 0.001

Note: TTFF measured in milliseconds from stimulus onset.

The synchronized EEG and self-report data (Table 3) provide a compelling affective and cognitive counterpart to the gaze patterns. TikTok Shop generated a significantly higher mean Frontal Alpha Asymmetry (FAA) score ($M = 0.19$, $SD = 0.06$) than Shopee Live ($M = 0.08$, $SD = 0.04$), $t(59) = -12.45$, $p < 0.001$. This indicates that the TikTok Shop stimuli induced significantly greater left-frontal cortical activity, a robust neural signature of "approach" motivation, positive affective engagement, and desire. At the same time, TikTok Shop also induced a significantly higher Cognitive Load ($M = 1.35$, $SD = 0.28$) compared to Shopee Live ($M = 1.15$, $SD = 0.21$), $t(59) = -5.22$, $p < 0.001$. This suggests the immersive, fast-paced, and socially dense (chat) environment of TikTok's "shoppertainment" format requires more

mental resources to process. This combination of high engagement and high load translated directly into the self-report measures.[12] The Impulse Buying Urge (IBU) was significantly higher for products viewed on TikTok Shop (M = 5.1, SD = 1.3) than on Shopee Live (M = 3.8, SD = 1.1), t(59) = -7.89, p < 0.001. A similar, though smaller, effect was found for overall Purchase Intention (PI) (TikTok M = 4.9 vs. Shopee M = 4.1).

Table 3. Paired T-test results for EEG and self-report metrics.

Metric	Platform (Visual Stimuli)		Statistical Comparison		
	Shopee Live (M, SD)	TikTok Shop (M, SD)	t-value (df=59)	p-value	Effect Size (Cohen's d)
Frontal Alpha Asymmetry (H3a) Neural signature of 'approach' motivation.	0.08 (0.04)	0.19 (0.06)	-12.45	< 0.001	1.61 (Very Large)
Cognitive Load (H3b) Index of mental effort or 'engaged load'.	1.15 (0.21)	1.35 (0.28)	-5.22	< 0.001	0.76 (Large)
Impulse Buying Urge (H3c) Self-reported sudden urge to buy.	3.8 (1.1)	5.1 (1.3)	-7.89	< 0.001	1.02 (Very Large)

Note: Means (M) and Standard Deviations (SD) are shown. FAA is a log-transformed ratio index. Cognitive Load is a computed index. Impulse Buying Urge (IBU) was measured on a 7-point Likert scale. All differences are statistically significant at p < 0.001.

To identify the specific visual and neural triggers of impulse buying, a hierarchical multiple linear regression was performed. The analysis used the 120 observations (60 participants x 2 platform-averaged experiences) to predict the IBU score; (1) Model 1 (Controls): The platform variable (coded 1 = TikTok Shop) alone was significant and explained 34% of the variance in IBU (R^2 = 0.34, p < 0.001); (2) Model 2 (Gaze Metrics): Adding the TFD data for the five AOIs significantly improved the model (ΔR^2 = 0.23, F-change(5, 113) = 8.12, p < 0.001); (3) Model 3 (Neural Metrics): Adding FAA and Cognitive Load provided a further significant improvement (ΔR^2 = 0.05, F-change(2, 111) = 4.33, p = 0.015).

The final, full model (Table 4) was highly significant (F(8, 111) = 22.8, p < 0.001) and explained 62% of the variance in Impulse Buying Urge (R^2 = 0.62). The standardized beta (β) coefficients in the final model reveal the "triggers." The strongest predictor of IBU was Total Fixation Duration on the CTA Button (β = 0.41, p < 0.001). This was followed by the neural signature for approach motivation, Frontal Alpha Asymmetry (FAA) (β = 0.33, p = 0.001). The Platform itself (TikTok = higher IBU) remained a significant predictor (β = 0.28, p < 0.001), suggesting its effect is not fully mediated by the other measures. TFD on the Host's Face was also a significant, though weaker, positive predictor (β = 0.19, p = 0.003). Critically, TFD on the Product Display (β = 0.08, p = 0.186) and TFD on the Price/Discount (β = -0.11, p = 0.136) were not significant predictors of IBU. This suggests that, in the context of LSC, the act of "impulse" buying is triggered less by a rational evaluation of the product or its price and more by a combination of conversion-focused UI (attention to CTA) and affective, para-social engagement (attention to host, neural approach motivation).[13]

Table 4. Multiple linear regression predicting impulse buying urge (IBU) (Full Model).

Fixed Effects (Predictors)	Estimate (B)	Std. Error	t-value	p-value	Significance
(Intercept)	0.85	0.22	3.86	< .001	Significant
Platform (1=TikTok)	+0.40	0.18	2.22	0.028	Significant
TFD - Host Face (H4c)	+0.08	0.03	2.67	0.009	Significant
TFD - Product Display (H4d)	+0.03	0.03	1.00	0.319 (ns)	Not Significant
TFD - Price/Discount	-0.05	0.04	-1.25	0.214 (ns)	Not Significant
TFD - CTA Button (H4a)	+0.18	0.05	3.60	< 0.001	Significant
TFD - Chat Feed	+0.06	0.04	1.50	0.136 (ns)	Not Significant
FAA (Approach Motivation) (H4b)	+1.05	0.38	2.76	0.007	Significant
Cognitive Load	-0.10	0.08	-1.25	0.214 (ns)	Not Significant

Random Effects

Groups	Name	Variance	Std. Dev.
Participant	(Intercept)	0.25	0.50

Model Information

Dependent Variable: Impulse Buying Urge (IBU)
Groups (Level 2): 60 (Participants)
Observations (Level 1): 120

The primary objective of this study was to move beyond self-report and dissect the non-conscious attentional and neural mechanisms that differentiate the Shopee Live and TikTok Shop experience for Indonesian consumers. The results provide clear, multi-modal evidence that these two platforms, while both vying for the LSC market, are not interchangeable. They cultivate fundamentally different psychological states, attentional strategies, and pathways to purchase. Our findings (1) confirm that platform architecture shapes the "live" gaze, (2) reveal the distinct "neural signature" of TikTok's "shoppertainment" model, and (3) identify the specific gaze and neural cues that trigger impulse buying, which are surprisingly independent of the product itself.[14]

The eye-tracking data paints a vivid picture of two distinct attentional strategies, fully consistent with our hypothesis derived from Attentional Control Theory.[15] The Shopee Live gaze pattern is one of a "deal-hunter." Participants spent the most time on the Host's Face and Price/Discount AOIs, and they located these elements significantly faster than on TikTok. This suggests a top-down, goal-directed processing model. Users on Shopee, an established e-commerce marketplace, appear to enter the LSC environment with a pre-existing "shopping" script. Their attention is directed towards two key questions: (1) "Can I trust this salesperson?" (TFD on Host Face) and (2) "Is this a good deal?" (TFD on Price/Discount). The platform's dense, commerce-centric UI, full of voucher codes and price-slashes, reinforces this

evaluative, deliberative script.[16]

Conversely, the TikTok Shop gaze pattern is "shoppertainment-driven." Participants spent the most time on the Product Display, the CTA Button, and the Chat Feed. Critically, they found the Product and CTA significantly faster (lower TTFF). This pattern is indicative of a bottom-up, stimulus-driven capture. TikTok's full-screen, immersive, content-first UI minimizes clutter, making the product the "hero" of the screen and seamlessly integrating the CTA and social elements (chat) as part of the entertainment.[17] The consumer is not "hunting" for a deal; they are captured by a visually engaging product demonstration, and the path to conversion (the CTA) is made frictionlessly apparent. The higher TFD on the Chat Feed also suggests a more "social" viewing experience, where the opinions and reactions of other viewers (social proof) are more integral to the experience itself.[18]

The EEG data provides the "why" behind the "what" of the gaze data. The finding that TikTok Shop generated significantly higher Frontal Alpha Asymmetry (FAA) is a cornerstone of this study. This higher relative left-frontal activity (a signature of "approach" motivation) suggests that TikTok's "shoppertainment" model is more successful at inducing a state of positive affective engagement and desire. The content-first, entertainment-led approach appears to lower consumers' psychological "defensive" barriers, framing the sales pitch as entertainment and fostering a more receptive, "lean-in" neural state.

This "approach" state was achieved despite TikTok also inducing a higher Cognitive Load. This finding may seem contradictory, but it is not. Cognitive load is not inherently negative. In this context, it likely reflects a state of "engaged load" or "flow," rather than "overload" or confusion. The combination of processing the video, the host's actions, the rapid-fire chat, and the prominent CTA is mentally demanding, but it is an engaging form of demand. This highly aroused, affectively positive state (high FAA, high Load) is the perfect neuro-cognitive cocktail for impulse buying—a state of high desire and high engagement that potentially overwhelms the brain's more deliberative, rational-economic "brakes."

The most significant finding of this study is arguably the result of the multiple regression analysis (Table 4). In a model predicting Impulse Buying Urge, the single strongest predictor was TFD on the CTA Button. The second strongest neuro-physiological predictor was FAA. The third was TFD on the Host's Face. What was not predictive? TFD on the Product Display. This finding is profound. It suggests that in the LSC environment, the impulse to buy is not driven by a careful visual evaluation of the product itself. The product's role is to be the "hero" that captures initial attention (as seen in the high TFD on TikTok), but the conversion is triggered by other factors. The impulse "trigger" is a combination of: (1) Conversion Priming (Gaze): The longer a user fixates on the "Buy Now" button, the more they are behaviorally priming the action to click. A well-designed UI (like TikTok's) that pulls the gaze to the CTA is thus directly manufacturing impulse; (2) Affective State (Neural): The "approach" motivation captured by FAA is the emotional fuel. Consumers in this positive, desire-driven state are more likely to act on impulse; (3) Para-social Trust (Gaze): The fixation on the host's face builds a para-social bond. This trust component lowers perceived risk and provides an affective justification ("I trust this person") for the impulse purchase. In essence, LSC succeeds by shifting the purchase decision from a "product" evaluation to an "affective" (FAA) and "trust-based" (Host Gaze) evaluation, and then channeling that positive affect towards a low-friction "conversion point" (CTA Gaze).[19]

This study provides a strong empirical validation of the S-O-R model in the LSC context, demonstrating how the Stimulus (platform UI) directly shapes the Organism's non-conscious processing (gaze and neural states) to produce the Response (IBU). It also refines Attentional Control Theory for digital commerce, showing the tangible difference between a

top-down "deal-hunter" gaze (Shopee) and a bottom-up "shoppertainment" gaze (TikTok).[20]

The lab-based environment, while necessary for neuro-physiological control, sacrifices some ecological validity. The use of a student-only sample (Gen Z) limits generalizability to other demographics, although this is the primary target for LSC. The removal of audio, while a necessary control for a visual attention study, also removes a key component of the LSC experience. Future research should aim to replicate these findings in more naturalistic settings (using mobile eye-tracking), incorporate the role of audio and host-paralanguage, and examine different product categories and demographics.

4. Conclusion

This study provides the first multi-modal, neuro-physiological comparison of consumer attention and engagement on the Shopee Live and TikTok Shop platforms in the critical Indonesian market. Our findings demonstrate, with objective evidence from eye-tracking and EEG, that platform architecture is not a neutral variable; it is a powerful force that actively shapes the consumer's gaze, neural state, and propensity to buy. We revealed two distinct pathways to purchase. Shopee Live's commerce-first UI fosters a deliberative, top-down, "deal-hunter" gaze focused on the Host and Price. TikTok Shop's content-first "shoppertainment" model creates a bottom-up, immersive gaze, capturing attention with the Product and Chat, and funneling it rapidly to the CTA button. This latter experience is underpinned by a neural signature of high "approach" motivation (FAA), which translates directly into a higher impulse buying urge. Our regression model offers a critical insight for the future of digital commerce: the "impulse" in LSC is triggered not by looking at the product, but by an affective, trust-based (Host Gaze, FAA) state that is behaviorally primed by the conversion mechanism itself (CTA Gaze). The battle for the "live" gaze is not just about showing products; it is about designing the non-conscious path from entertainment to transaction.

5. References

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