

***THE IMPACT OF REAL-TIME LIVE STREAMING INTERACTIVITY ON
CONSUMER ENGAGEMENT AND IMPULSIVE BUYING***

**PENGARUH INTERAKTIVITAS SIARAN LANGSUNG REAL-TIME
TERHADAP KETERLIBATAN KONSUMEN DAN PEMBELIAN IMPULSIF**

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ABSTRACT

The expansion of live streaming commerce has transformed customer shopping behaviors by amalgamating entertainment, engagement, and immediate purchasing into a cohesive experience. This research examines the impact of real-time live streaming interactivity on consumer engagement and impulsive purchasing via the lens of the Stimulus-Organism-Response theory. Data were gathered via a survey of Generation Z consumers engaged in live streaming shopping and analyzed using WarpPLS with structural equation modeling. The results indicate that interactivity markedly improves consumer involvement, hence reinforcing impulsive purchasing behavior. Furthermore, interaction directly impacts impulsive purchasing, affirming that prompt communication and interactive elements enhance both engagement and spontaneous buying decisions. Engagement serves as a vital intermediary, converting interactive stimuli into consumer reactions. This study enhances the theoretical application of the S-O-R model in digital commerce and offers practical advice for e-commerce platforms and streamers to develop balanced interactive methods that optimize engagement while reducing post-purchase unhappiness.

Keywords: *Real-Time Interactivity; Consumer Engagement; Impulsive Buying; Live Streaming Commerce; S-O-R Theory*

ABSTRAK

Perkembangan perdagangan melalui siaran langsung telah mengubah perilaku berbelanja konsumen dengan memadukan hiburan, keterlibatan, dan pembelian instan menjadi sebuah pengalaman yang utuh. Penelitian ini mengkaji dampak interaktivitas siaran langsung secara real-time terhadap keterlibatan konsumen dan pembelian impulsif melalui kacamata teori Stimulus-Organisme-Respon. Data dikumpulkan melalui survei terhadap konsumen Generasi Z yang terlibat dalam belanja melalui siaran langsung dan dianalisis menggunakan WarpPLS dengan pemodelan persamaan struktural. Hasil penelitian menunjukkan bahwa interaktivitas secara signifikan meningkatkan keterlibatan konsumen, sehingga memperkuat perilaku pembelian impulsif. Selain itu, interaksi secara langsung memengaruhi pembelian impulsif, yang menegaskan bahwa komunikasi yang cepat dan elemen interaktif meningkatkan baik keterlibatan maupun keputusan pembelian spontan. Keterlibatan berperan sebagai perantara penting yang mengubah rangsangan interaktif menjadi reaksi konsumen. Penelitian ini memperkaya penerapan teoretis model S-O-R dalam perdagangan digital dan memberikan saran praktis bagi platform e-commerce serta para streamer untuk mengembangkan metode interaktif yang seimbang, yang mengoptimalkan keterlibatan sekaligus mengurangi ketidakpuasan pasca-pembelian.

Kata Kunci: Interaktivitas Real-Time; Keterlibatan Konsumen; Pembelian Impulsif; Perdagangan Streaming Langsung; Teori S-O-R

INTRODUCTION

Live streaming commerce has swiftly emerged as a highly dynamic mode of digital retail, integrating entertainment, community engagement, and immediate transactions. Platforms like TikTok Shop, Taobao Live, and Shopee Live facilitate real-time connections between merchants and

influencers and consumers, promoting immediacy, trust, and social presence (Nguyen Huu et al., 2023). In contrast to conventional e-commerce, which focuses on static product details, live streaming excels through ongoing engagement, gamified features, and emotional connection (Chang & Yu, 2023). This transition has radically

changed how customers, especially Generation Z, interact with companies and make purchasing decisions in the digital marketplace (Andika et al., 2025; Hidayat et al., 2024).

Consumer behavior in live streaming commerce is influenced by interactive features that both entertain and persuade. Research indicates that real-time engagement markedly enhances consumer trust, flow experience, and emotional arousal, collectively improving purchase intentions (Indriastuti et al., 2024; Khoi & Le, 2024). Recent research from Indonesia indicates that Generation Z customers are especially receptive to interactive elements in live streaming commerce, with social presence markedly affecting their impulsive purchasing behaviors (Andika et al., 2025; Widjaja et al., 2025). This phenomena spans Southeast Asian marketplaces, where emotional arousal mechanisms govern the relationship between platform features and impulsive purchasing (Ngo et al., 2024). The amalgamation of entertainment experiences, educational material, and visual displays generates a multifaceted stimuli environment that elicits cognitive and emotional responses, hence fostering impulse purchasing behavior among digital natives (Ngo et al., 2025).

The increase in impulsive purchasing, especially among Generation Z consumers who are strongly influenced by interactive and social stimuli, has emerged as a hallmark of live streaming commerce (Makmor et al., 2024). In Indonesia, where e-commerce is essential to daily life, Generation Z constitutes a significant portion of live streaming consumers with marked impulsive purchasing behaviors (Andika et al., 2025). Studies indicate that interactive

elements like live chat, emoticons, real-time reactions, and gamified tasks enhance consumer trust and perceived satisfaction, hence directly boosting engagement and impulsive purchasing (Indriastuti et al., 2024; Kamila & Ariyanti, 2024). Gamification has demonstrated the ability to maintain engagement and generate enduring loyalty (Chang & Yu, 2023).

Nonetheless, the function of interaction presents certain obstacles. Research underscores the engagement paradox: although heightened interaction enhances immediate impulse purchasing, it may concurrently diminish post-purchase satisfaction due to cognitive fatigue and discrepancies in expectations (Fan et al., 2025). Lang et al. (2025) present empirical evidence of an inverted U-shaped correlation between real-time comments and product sales, suggesting that excessive involvement, defined as "overloaded comments," can inundate consumers and reduce sales efficacy. This discovery highlights the necessity of calibrating interactive intensity to enhance both short-term engagement and enduring consumer pleasure.

Previous research has predominantly focused on Asian markets, especially China, and has mainly depended on self-reported metrics, resulting in deficiencies in comprehending wider cultural contexts, platform-specific variations, and long-term consumer satisfaction (Tedjakusuma et al., 2025; Yang et al., 2024). Zhu and Vijayan (2025) identified multidimensional antecedents of impulse buying via perceived enjoyment in the context of Chinese live streaming commerce; however, the specific mechanisms by which engagement mediates the relationship between interactivity and impulsive buying across various cultural contexts

remain insufficiently examined. The comparative effects of interactivity across various platform types (e-commerce versus social network platforms) require further examination (Widjaja et al., 2025).

This study aims to examine the direct and indirect impacts of real-time live streaming interactivity on consumer engagement and impulsive purchasing behavior. This study investigates the mediating function of involvement within the Stimulus-Organism-Response paradigm, enhancing both theoretical advancement and practical approaches for digital commerce. This research enhances our comprehension of how interactive stimuli convert into behavioral consequences through psychological and emotional engagement processes by concentrating on Generation Z customers in emerging economies and utilizing structural equation modeling.

Stimulus-Organism-Response (S-O-R) Framework

The Stimulus-Organism-Response theory (Mehrabian & Russell, 1974) offers a comprehensive framework for examining consumer behavior in digital environments. In live streaming commerce, interactivity acts as the stimulus, internal states like trust, enjoyment, flow, and parasocial interaction embody the organism, while outcomes such as engagement and impulsive purchasing reflect the response (Ming et al., 2021; Nguyen Huu et al., 2023). Recent implementations of the S-O-R paradigm in live streaming scenarios have illustrated its adaptability in elucidating intricate consumer behaviors across various cultural environments (Hameed et al., 2025; Widjaja et al., 2025; Yang et al., 2024).

The theory asserts that external cues activate interior cognitive and emotional processes, which then determine behavioral responses. In live streaming commerce, interactive aspects including real-time discussion, product demonstrations, and gamified elements work as environmental cues that influence consumers' psychological states (Patricia et al., 2025). Hameed et al. (2025) established that relational relationships (stimulus) positively impact trust (organism), which in turn influences internal perception processes and finally promotes purchasing intention (response). This sequential mediation process underscores the essential function of psychological systems in converting external cues into behavioral results.

Real-Time Interactivity

Real-time interactivity includes communication elements such as live chat, emoticons, reactions, and gamified activities. Studies demonstrate that interactive elements enhance consumer trust and perceived satisfaction, hence immediately boosting engagement and impulsive purchasing (Khoi & Le, 2024). Indriastuti et al. (2024) established that real-time engagement increases perceived delight among Indonesian Generation Z consumers, which directly stimulates impulse buying behavior during live streaming shopping. Their findings, derived from a sample of 119 participants assessed with Smart-PLS, offer robust empirical evidence for the mediation function of subjective satisfaction in the association between interactivity and impulsive buying.

Zhu and Vijayan (2025) identified seven multidimensional determinants of subjective delight in live streaming commerce: parasocial interaction, telepresence, discounted price,

serendipitous knowledge, and ubiquity. Their research, including 380 Chinese customers, illustrates that interactivity includes both social aspects (parasocial interaction, social presence) and technology aspects (telepresence, ubiquity). Parasocial connection, characterized by a sense of friendship or intimacy with a streamer, emerged as a major predictor of both subjective enjoyment and the impulse to make purchases. Likewise, Makmor et al. (2024) discovered that social commerce attributes and social presence enhance parasocial interaction, which in turn stimulates impulsive purchasing behavior on live-streaming platforms.

Amilia et al. (2025) further shown that interactivity and perceived values favorably affect customer trust, which in turn fosters involvement in live-streaming commerce within the Indonesian beauty business setting. Their research, involving 505 participants and assessed via SmartPLS, indicates that organizations ought to deliver both educational and engaging material while facilitating seamless interactions during live streaming to foster customer trust and improve engagement. This discovery highlights the significance of content quality and interaction management as interrelated aspects of interactivity.

Nonetheless, the correlation between interactivity and favorable outcomes is not consistently linear. Lang et al. (2025) demonstrated an inverted U-shaped correlation between viewers' real-time comments and product sales in live streaming commerce. Utilizing minute-level data and the interaction ritual model, they discovered that "overloaded comments" during live streaming can induce cognitive burden and diminish sales efficacy. Significantly, the streamer's discussion can alleviate this adverse

effect and exerts a delayed beneficial influence on sales, generally occurring 2.5 to 5 minutes post-dialogue conclusion. This discovery underscores the intricacy of interaction management and the necessity for platform designers to contemplate appropriate degrees of interactive intensity.

Gamification has demonstrated the ability to maintain engagement and generate enduring loyalty (Chang & Yu, 2023). Kamila and Ariyanti (2024) discovered that demand, convenience, interactivity, fun, and attractiveness greatly enhance perceived enjoyment in TikTok live purchasing, which profoundly impacts impulse buying among Indonesian Generation Z customers. Their examination of 464 genuine replies indicates that all five stimulus variables collaboratively increase the hedonic experience that propels spontaneous purchasing.

Consumer Engagement

Consumer engagement denotes cognitive, emotional, and behavioral involvement in interactive platforms. Participation in live streaming commerce involves various aspects: attention and absorption (cognitive), enthusiasm and delight (emotional), and sharing and co-creation (behavioral) (Tedjakusuma et al., 2025). Widjaja et al. (2025) established that consumer involvement in live-streaming commerce is influenced by cognitive mechanisms (trust) and affective mechanisms (flow state), with platform type serving as a moderator of these interactions. Their multigroup investigation of e-commerce and social network platforms demonstrated that social presence favorably influences both trust and flow state, while the magnitude of these effects differs among platform types.

Patricia et al. (2025) established that community development, social dynamics, and interactivity are essential factors influencing trust, engagement, and loyalty in social commerce contexts, whereas personalization, typically regarded as fundamental to consumer experience, demonstrates negligible impact on engagement. This discovery contests traditional beliefs and indicates that communal and interactive components may be more pivotal than personal personalization in collective purchase experiences such as live streaming.

Zhang et al. (2024) discovered that socially-oriented communication styles surpass task-oriented methods in fostering engagement, particularly among customers with greater experience. This indicates that the relationship aspect of streamer-viewer interactions is more significant than mere transactional or informative communication. Engagement fosters loyalty and maintains engagement, acting as a vital intermediary between interaction and behavioral results (Tedjakusuma et al., 2025). Lim et al. (2025) established that emotional involvement mediates the connection between the zero moment of truth (ZMOT) value obtained from live streaming e-commerce features and impulse buying inclinations in millennial consumers. Their research utilizing cognitive appraisal theory demonstrates that emotional involvement, along with trust in the streamer, converts platform attributes into impulsive purchasing behavior.

Impulsive Buying

Impulsive buying denotes unplanned purchasing driven by emotional stimuli and contextual factors. Research indicates that interactivity enhances impulsive buying by fostering

urgency, perceived delight, and social presence (Hoang & Dang, 2024; Indriastuti et al., 2024). Ngo et al. (2024) discovered that external factors, including time pressure, quantity pressure, economic incentives, visual allure, and auditory stimuli, significantly affect arousal. Furthermore, arousal and pleasure were identified as pivotal mediators influencing impulsive purchasing decisions among Vietnamese Generation Z consumers on the Shopee video platform. Their research, examining 438 participants by PLS-SEM, illustrates that the purposeful application of external cues can effectively evoke emotions that result in impulsive purchasing behavior.

In addition, Ngo et al. (2025) demonstrated that entertainment and educational experiences enhance emotional engagement by inducing arousal and pleasure, whereas escapist activities offer transient respite from daily stressors (increasing arousal) but may also underscore personal insecurities (potentially diminishing pleasure). Aesthetic experiences, influenced by individual preferences, elicit emotional responses that differ in intensity of pleasure. For Generation Z, both arousal and pleasure substantially impact impulsive purchasing decisions, validating the dual-pathway emotional mechanism in online impulse buying.

Silalahi et al. (2025) discovered that hedonic value had a more significant impact on affective impulsive purchasing than utilitarian value, especially under situations of time constraint. This research indicates that the emotional and sensory dimensions of live streaming commerce are more influential in prompting impulsive purchases than utilitarian or rational factors. The research emphasizes that shopping intentions influence value perceptions, which in

turn dictate the characteristics and intensity of impulsive purchasing behavior.

Excessive involvement may lead to customer regret, highlighting the necessity of balancing stimulation and enjoyment (Fan et al., 2025). Pandey et al. (2024) established that interaction, informativeness, and hedonic motivation significantly affect impulsive buying behavior in response to sponsored social media commercials, although perceived relevance did not have a significant impact. This research indicates that the experience quality of contact is more significant than the individualized targeting of content in eliciting spontaneous purchases.

Parasocial Interaction and Trust

Parasocial connection, characterized by a perceived familiarity or intimacy with a streamer, constitutes a distinctive mechanism in live streaming commerce. It cultivates trust and emotional connections, hence augmenting engagement and buy intention (Makmor et al., 2024). Makmor et al. (2024) discovered that social commerce attributes, social presence, and narrative engagement positively affect parasocial interaction, which serves as a crucial mediator between social elements and impulsive purchasing behavior on live-streaming platforms. Their research, utilizing 335 genuine responses processed through Smart PLS, illustrates that parasocial interaction influences the transformation of social inputs into purchase behavior.

Karahan (2025) further established that resemblance, likability, and social attractiveness enhance parasocial contact, which in turn stimulates online impulsive purchasing behavior. The study, utilizing the S-O-R model and examining 589 answers

from Turkey, demonstrates that parasocial interaction functions as a fundamental biological variable linking influencer attributes and consumer purchasing behavior.

Trust is regularly identified as the most significant determinant of consumer involvement and impulsive purchasing in live commerce settings (Tedjakusuma et al., 2025). Hameed et al. (2025) established that financial, social, and structural linkages significantly impact trust, which in turn influences internal perception processes and diminishes product uncertainty. Their hybrid approach, integrating PLS-SEM and Artificial Neural Networks (ANN), uncovers non-linear connections and offers profound insights into the cognitive factors influencing purchase intention in live-streaming retail.

It was proven by Amilia et al. (2025) that customer trust has a favorable influence on customer involvement with live-streaming commerce. The authors emphasized that trust serves as an important mediator between interactive features (and perceived values) and engagement outcomes. In the context of live streaming, the essential role of trust in establishing and maintaining long-term connections with customers is brought to light by this sequential mediation process, which involves interaction, trust, and engagement.

RESEARCH METHODS

This research utilized a quantitative explanatory design. The demographic comprised Generation Z customers engaged in live streaming commerce. A purposive sampling method was employed to identify respondents with firsthand experience in purchasing via live streaming platforms, including TikTok Shop and Shopee

Live. Data were gathered with a standardized questionnaire featuring items assessed on a five-point Likert scale.

Constructs included:

1. Real-time communication, gamification, responsiveness interactivity: features, elements,
2. Consumer engagement: cognitive engagement, emotional engagement, behavioral engagement
3. Impulsive buying: urge to buy impulsively, spontaneous purchasing behavior

Data analysis was conducted with WarpPLS 8.0 through structural equation modeling to assess validity, reliability, and proposed correlations. Utilizing WarpPLS corresponds with contemporary methodological frameworks in live streaming commerce study (Indriastuti et al., 2024; Widjaja et al., 2025), facilitating a rigorous analysis of intricate mediating relationships.

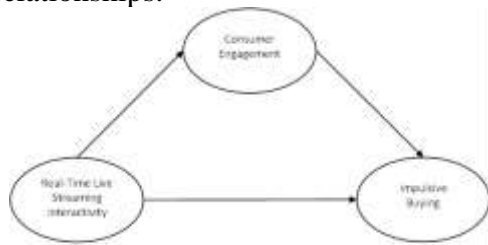


Figure 1. Theoretical Framework

RESULTS AND DISCUSSIONS

Measurement Model

Convergent validity was established, as all factor loadings surpassed the necessary levels. The composite reliability and Cronbach's alpha values exceeded the minimum thresholds, so affirming robust internal consistency. The predictive relevance (Q²) values were satisfactory, and the Goodness-of-Fit index demonstrated a robust model fit (GoF = 0.547, big).

Structural Model

The results demonstrate that real-time interactivity significantly influences impulsive buying, both directly and indirectly:

Variable	Variable	Koef.	Sig.
Real-Time Live Streaming Interactivity	Impulsive Buying	0.837	<0.001
Real-Time Live Streaming Interactivity	Impulsive Buying	0.359	<0.001
Consumer Engagement	Impulsive Buying	0.549	<0.001

Source: Ouput WarpPLS 8.0, 2025

Mediation Analysis:

Variable	Variable	Variable	Sig.
Real-Time Live Streaming Interactivity	Consumer Engagement	Impulsive Buying	<0.001

Source: Ouput WarpPLS 8.0, 2025

Discussion

The Direct Effect of Interactivity on Engagement

The results indicate that interactivity significantly influences customer engagement, accounting for more than seventy percent of its variation (R² = 0.70, path coefficient = 0.837, p < 0.001). This finding corresponds with Amilia et al. (2025), who discovered that interaction and perceived values positively affect customer engagement via the mediating role of trust within the Indonesian beauty industry setting. Our findings enhance this understanding by illustrating that interactivity can directly stimulate engagement without the need to explicitly model trust as a distinct mediator, indicating that the engagement construct may inherently encompass aspects of cognitive trust and affective commitment.

Zhu and Vijayan (2025) found parasocial interaction, telepresence, discounted pricing, serendipitous knowledge, and ubiquity as multidimensional precursors to subjective satisfaction in Chinese live streaming business. Whereas their study emphasized felt enjoyment as the main variable, our research identifies engagement, which includes cognitive,

emotional, and behavioral dimensions, as the primary mediating mechanism. This expansive view of the organism variable offers a more thorough comprehension of how interaction stimuli are converted into psychological states that influence purchasing behavior.

The substantial effect size of interactivity on engagement aligns with the findings of Patricia et al. (2025), who identified community, social factors, and interactivity as crucial determinants of involvement in social commerce contexts. Their discovery that personalization has a little effect on engagement contradicts established beliefs and implies that communal, socially engaging experiences may be more impactful than individualized customization in live streaming environments. This result carries significant implications for platform design, indicating that resources should focus on improving real-time social interaction capabilities rather than advanced personalization algorithms.

The Mediating Role of Engagement

Engagement markedly enhances impulsive buying (path coefficient = 0.549, $p < 0.001$), validating its function as a potent catalyst for unplanned purchases. Mediation research indicates that consumer engagement partially mediates the association between interactivity and impulsive purchasing, hence enhancing the total effect. This conclusion aligns with Widjaja et al. (2025), who established that psychological states, notably trust and flow state, influence the association between social presence and impulsive buying in the context of Indonesian live-streaming shopping.

Lim et al. (2025) established that emotional involvement mediates the connection between zero moment of

truth (ZMOT) value and impulse buying tendencies, with trust in the streamer also serving a significant mediating function. Their use of cognitive appraisal theory demonstrates that live streaming e-commerce experiences evoke users' emotions via a sequential process comprising primary evaluation (ZMOT value), secondary appraisal (trust and emotional involvement), and behavioral results (impulse purchasing). Our findings support this by demonstrating that engagement, when broadly defined to encompass cognitive and behavioral characteristics, functions as a pivotal organism variable that converts interactive stimuli into purchase responses.

The partial mediation result suggests that although engagement is a vital channel, interactivity also has direct effects on impulsive purchase, indicating the presence of various mechanisms. Indriastuti et al. (2024) discovered analogous findings, indicating that perceived enjoyment partially mediated the association between real-time interactivity and impulsive purchasing among Indonesian Generation Z consumers. This indicates that interactive elements provide both hedonic pleasure (reflected in engagement) and situational urgency or cognitive heuristics that prompt impulsive purchases without comprehensive psychological evaluation.

The Direct Effect of Interactivity on Impulsive Buying

Interactivity significantly influences impulsive buying (path coefficient = 0.359, $p < 0.001$), indicating that interactive elements generate urgency and enthusiasm that encourage unplanned purchasing behavior. This discovery corroborates the research of Indriastuti et al. (2024),

which established that real-time interactivity exerts both direct and mediated (by perceived enjoyment) influences on impulse purchasing behavior among Generation Z during live streaming commerce. The direct pathway posits that specific interactive aspects, such as flash sales, limited-time offers, and urgent calls-to-action, circumvent considerable cognitive processing and directly elicit spontaneous reactions.

Ngo et al. (2024) discovered that extrinsic factors, including time constraints, quantity incentives, and economic advantages, induce arousal, which in turn stimulates impulsive purchasing behavior among Vietnamese Generation Z customers on the Shopee video platform. Kamila and Ariyanti (2024) established that demand, convenience, involvement, playfulness, and attractiveness considerably enhance perceived enjoyment, which profoundly impacts impulse buying in TikTok live shopping. The findings indicate that the direct influence of interactivity on impulsive purchasing is notably intensified when interactive features include time-sensitive components and hedonic appeals.

Pandey et al. (2024) shown that interactivity, informativeness, and hedonic motivation substantially affect impulsive purchasing behavior in reaction to sponsored social media adverts among Nepalese consumers. The uniformity of these results across several cultural settings (Indonesia, Vietnam, Nepal, China) indicates that the direct influence of interactivity on impulsive purchasing is a resilient phenomena that surpasses particular market attributes.

The Stimulus-Organism-Response Framework Validation

The results corroborate the Stimulus-Organism-Response theory, wherein interactive features function as external stimuli that influence psychological states and customer reactions. The findings corroborate previous studies indicating that real-time engagement enhances trust and enjoyment, subsequently resulting in impulse purchases (Indriastuti et al., 2024; Khoi & Le, 2024). Hameed et al. (2025) illustrated through PLS-SEM and Artificial Neural Networks (ANN) that relational relationships (stimulus) impact trust (organism), which subsequently influences internal perception processes and finally drives purchase intention (response). Their hybrid methodology uncovers non-linear correlations and offers profound insights into cognitive factors, indicating that future study can utilize comparable advanced analytical techniques to elucidate the complexities inside the interactivity-engagement-impulsive buying route.

Yang et al. (2024) utilized the S-O-R paradigm to illustrate that the traits of live streamers, product characteristics, and the field atmosphere (stimuli) affect trust and impulsiveness (organism), which in turn influence purchase intention (response) within the Chinese e-commerce sector. Patricia et al. (2025) employed the S-O-R paradigm to demonstrate that community, personalization, social factors, and interactivity influence customer-to-customer interactions and perceived value (organism), which in turn affect engagement and purchasing decisions (response). The uniformity of S-O-R applications in various live streaming commerce scenarios validates the framework's strength and adaptability.

The Mediation Role of Engagement and Parasocial Interaction

The mediating role of engagement aligns with Zhang et al. (2024), who discovered that socially-oriented communication styles more successfully boost engagement and purchasing habits compared to task-oriented methods. Makmor et al. (2024) similarly established that parasocial interaction, facilitated by social commerce characteristics and social presence, mediates the connection between social elements and impulsive purchasing, with parasocial interaction enhancing consumer trust, which is pivotal to impulsive purchase.

Karahan (2025) established that parasocial contact functions as a vital mediator between influencer attributes (similarity, likability, social appeal) and online impulsive purchasing behavior. This indicates that participation in live streaming business encompasses not just cognitive or emotional aspects but also entails relationship connections with streamers. Future study may investigate how various elements of engagement (cognitive, emotional, relational) differentially influence impulsive buying across product categories and consumer segments.

The Engagement Paradox and Optimal Interactivity

This study corroborates the engagement dilemma identified by Fan et al. (2025): although interaction enhances sales, excessive intensity may overwhelm consumers, hence diminishing post-purchase satisfaction. Lang et al. (2025) present persuasive empirical evidence of an inverted U-shaped correlation between real-time comments and product sales in live streaming commerce, indicating that "overloaded comments" induce cognitive strain and diminish sales efficacy. Significantly, they discovered that a streamer's dialogue might

alleviate this adverse effect, and that such dialogue exerts a delayed favorable influence on sales, generally occurring 2.5 to 5 minutes post-dialogue conclusion.

This discovery has significant ramifications for platform architecture and streamer education. Platforms and streamers must equilibrate interactive intensity to maintain both instant revenue and enduring loyalty. Instead than increasing the number of interactive elements, practitioners should prioritize enhancing the quality and timing of interactions. The discourse of streamers fulfills two primary roles: moderating an influx of viewer comments and delivering meaningful product information that affects purchasing decisions with a delay.

The engagement paradox indicates possible adverse effects of elevated interactivity that were not assessed in this study. Future research ought to examine post-purchase pleasure, consumer regret, and return behavior as consequences of varying degrees of interaction and engagement intensity. This would offer a more comprehensive understanding of the long-term impacts of interactive live streaming commercial experiences.

Cross-Cultural and Contextual Considerations

Although our results are consistent with research from China (Zhu & Vijayan, 2025; Yang et al., 2024), Vietnam (Ngo et al., 2024, 2025), and other Asian settings, subsequent studies should investigate whether the intensity and characteristics of the interactivity-engagement-impulsive buying relationships differ across cultural dimensions, including individualism-collectivism, uncertainty avoidance, and power distance. Widjaja

et al. (2025) discovered that the influence of social presence on trust and flow state varies between e-commerce and social network platforms, indicating that platform attributes modulate these associations. Cross-cultural studies may elucidate whether cultural values similarly influence the outcomes we found.

CONCLUSION AND SUGGESTION

This study suggests that real-time live streaming interactivity substantially influences consumer engagement and impulsive purchasing behavior. Interactivity not only directly stimulates spontaneous purchasing but also indirectly enhances impulsive buying through participation. These findings affirm that engagement is a vital mediator that converts interactive inputs into consumer behavior, corroborating the Stimulus-Organism-Response paradigm.

Theoretical Contributions:

The research enhances S-O-R applications by highlighting involvement as both a result and a mediator in digital commerce. This research enhances comprehension of parasocial interaction and trust in influencing impulsive purchasing, using findings from recent studies on emotional arousal, subjective enjoyment, and flow state as organism factors (Indriastuti et al., 2024; Ngo et al., 2025; Widjaja et al., 2025; Zhu & Vijayan, 2025). This research elucidates both direct and mediated paths from interactivity to impulsive purchasing, offering a more refined comprehension of how interactive elements function through various psychological mechanisms.

Practical Contributions:

Platforms and streamers ought to develop interactive features that enhance enjoyment, trust, and social presence while avoiding cognitive overload (Lang et al., 2025). Equitable techniques can optimize quick acquisitions while guaranteeing enduring client contentment. Specifically:

1. Optimize interaction intensity: Avoid "overloaded comments" by implementing moderation tools and pacing mechanisms
2. Enhance streamer dialogue quality: Train streamers to provide substantive product information and manage viewer interactions effectively
3. Leverage parasocial bonding: Develop streamer personas that foster emotional connections without appearing inauthentic
4. Design for hedonic value: Incorporate entertainment, gamification, and aesthetic elements that enhance perceived enjoyment (Kamila & Ariyanti, 2024; Ngo et al., 2025)
5. Build trust systematically: Ensure transparency, consistency, and reliability in product information and streamer credibility (Amilia et al., 2025; Hameed et al., 2025)

Limitations:

This research is based on self-reported data and concentrates on Generation Z within Asian markets. The cross-sectional design constrains causal inference, and the study fails to assess post-purchase outcomes such as satisfaction, regret, or return behavior. The engagement dilemma (Fan et al., 2025; Lang et al., 2025) indicates possible adverse effects of elevated interactivity that require examination.

Future Research:

It is advisable to conduct cross-cultural and longitudinal research to investigate if the links among interaction, engagement, and impulsive purchase differ across cultural contexts and temporal dimensions. Hybrid techniques that integrate PLS-SEM with Artificial Neural Networks (ANN) may uncover non-linear connections and interaction effects (Hameed et al., 2025). The incorporation of adaptive technology, such as AI, to enhance real-time interactivity signifies a promising avenue (Tedjakusuma et al., 2025). Subsequent research ought to explore threshold effects of interaction, post-purchase ramifications, and configurational patterns by fuzzy-set Qualitative Comparative Analysis (fsQCA) to differentiate between high and low impulsive buying scenarios (Das et al., 2024).

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