

STIMULUS-ORGANISM-RESPONSE FACTORS DRIVING IMPULSE BUYING IN LIVE-STREAM SHOPPING ENVIRONMENTS: A SYSTEMATIC REVIEW

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Abstract

This study reviews empirical research examining what triggers impulse buying in live-streaming commerce and how these triggers work through psychological processes. The review took a systematic approach, using Scopus and DOAJ as the main databases. The search yielded 249 results, of which 34 studies published between 2020 and 2025 were included after screening. The analysis applies the stimulus-organism-response (SOR) framework. Four main types of stimuli appear consistently across studies. Social stimuli include streamer influence, viewer interaction, and social proof. Platform stimuli stem from real-time features that enhance the user experience. Promotional stimuli include time pressure, flash deals, and limited stock displays. Product presentation stimuli include demonstrations and clear visuals that help viewers imagine using the product. These stimuli affect emotional, cognitive, and immersive states. The most common internal responses linked to impulse buying are excitement, trust, perceived value, and flow. The impact of these stimuli varies depending on consumer traits, platform design, and product type. However, most studies rely on cross-sectional surveys from Asian markets, which limits generalization. This review offers an updated model connecting external triggers with psychological mechanisms.

Keywords: *Live-Streaming Commerce, Impulse Buying, S-O-R Framework, Digital Marketing, Consumer Behavior*

INTRODUCTION

Live-streaming commerce has rapidly become one of the most influential formats in digital retailing. Unlike traditional e-commerce, live-streaming integrates real-time product demonstrations, interactive communication, and instant purchasing functions, creating an immersive and socially rich environment for consumers. This format has expanded quickly across major platforms such as TikTok Shop, Taobao Live, and Shopee Live, reflecting a shift from static online browsing to experiential, entertainment-driven consumer engagement (Lee and Chen, 2021; Huo *et al.*, 2023). Its popularity is particularly strong in Asian markets, where high levels of digital participation have accelerated adoption and contributed to substantial commercial growth. Impulse buying, a spontaneous, unplanned, and emotionally driven purchase, has long been recognised as a central driver of sales in both offline and online commerce (Rook, 1987; Beatty and Elizabeth Ferrell, 1998). Classical consumer behaviour research highlights emotional arousal, hedonic motivation, and reduced cognitive deliberation as key antecedents of impulse purchases (Verplanken and Herabadi, 2001). Although these mechanisms are well established, they may manifest differently in live-streaming contexts, where consumers are exposed to continuous stimulation, persuasive cues, and interactive social influence that operate simultaneously and often more intensely than in conventional online settings.

The live-streaming environment uniquely combines stimuli such as streamer charisma, social presence, product visualisation, scarcity promotions, and social proof. From the Stimulus-Organism-Response (S-O-R) perspective (Mehrabian and Russell, 1974), these external cues function as environmental stimuli that activate internal organismic states such as emotional arousal, trust, flow experience, and parasocial attachment, which subsequently shape behavioural responses including impulse purchase intention (Dholakia, 2000). Recent empirical studies confirm that interactivity, entertainment value, and limited time offers significantly affect consumers' internal states, but findings remain inconsistent across markets and product categories (Gong and Jiang, 2023; Mardhiana, 2024). Some studies report that high interactivity enhances impulse intention, while others indicate that excessive stimulation may create cognitive overload and weaken purchase decisions. Emerging research (2023–2025) also

highlights additional psychological mechanisms and boundary conditions. Parasocial interaction with streamers has been shown to heighten emotional engagement and increase impulse buying among younger consumers (Huang and Mohamad, 2025). Product involvement and perceived usefulness may strengthen or weaken stimulus effects depending on consumer characteristics (Tang, Shao and Zhang, 2025). Furthermore, perceived urgency and time pressure, which is intensified by flash promotions and countdown timers, can accelerate impulsive decisions. These fragmented and sometimes contradictory findings reveal a clear need for an integrated framework that incorporates technological, social, and psychological factors shaping impulse buying in live-streaming commerce. In addition, limited research has examined how these factors interact simultaneously, underscoring the importance of a more holistic analytical approach.

To address these gaps, this study applies the S-O-R model to examine how streamer interactivity, product presentation quality, and limited-time promotional cues (stimuli) influence flow experience, trust, and emotional arousal (organism), which subsequently shape impulse purchase intention (response). By integrating established consumer behavior theory with contemporary live-streaming variables, the study provides a comprehensive account of the mechanisms underpinning impulsive purchase behavior in live-stream environments. This research contributes to theory by extending classical S-O-R principles to a modern digital commerce setting and clarifying the mediating pathways that link environmental stimuli to impulsive responses. It also offers practical guidance for platforms and sellers seeking to design effective yet ethically responsible live-commerce strategies that enhance engagement without exploiting consumer vulnerability. Through these contributions, the study advances current understanding of how digital retail environments shape consumer decision-making in the era of interactive commerce.

METHODOLOGY

This study utilizes a Systematic Literature Review (SLR) approach to synthesize empirical research on impulse buying in live-streaming commerce. The review process follows the Preferred Reporting Items for Systematic Reviews to ensure transparency, replicability, and methodological rigor throughout all stages of data collection, screening, and synthesis (Page *et al.*, 2021). This approach provides a comprehensive and structured analysis of existing evidence across disciplines such as marketing, psychology, and information systems.

Search Strategy

Systematic searching was conducted in October 2025 using two major academic databases: Scopus and the Directory of Open Access Journals (DOAJ). These databases were chosen for their broad coverage of peer-reviewed journals and multidisciplinary significance to consumer behavior and digital commerce research. In Scopus, Boolean search operators were applied to capture relevant literature across three conceptual domains: impulse buying, digital commerce, and live-streaming environments. The final Scopus query string was as follows:

(TITLE-ABS-KEY ("impulse buying" OR "impulsive buying" OR "impulse purchase" OR "impulsive purchase") AND TITLE-ABS-KEY ("social commerce" OR "social media commerce" OR "social shopping" OR "live shopping" OR "live streaming" OR "live commerce" OR "live stream")) AND PUBYEAR > 2019 AND PUBYEAR < 2026

The search query executed in the Scopus database yielded 222 recorded articles, representing the set of publications that matched the applied search parameters. In contrast, a different query was performed in the DOAJ database, as outlined below.

"impulse buying" OR "impulsive buying" OR "impulse purchase" OR "impulsive purchase" AND "social commerce" OR "social media commerce" OR "social shopping" OR "live shopping" OR "live streaming" OR "live commerce" OR "live stream"

Since DOAJ does not allow year filtering, the search was conducted using keywords related to impulse buying and live-commerce. This search yielded 27 records, which were filtered manually to retain only publications between 2020 and 2025.

Inclusion and Exclusion Criteria

To ensure the validity and relevance of the review, inclusion and exclusion criteria were systematically implemented. Only empirical, peer-reviewed journal articles written in English and published between 2020 and 2025 were included. Studies had to focus on impulse buying within live-streaming commerce contexts and have full-text availability.

Table 1. Inclusion and Exclusion Impulse Buying and Live-Streaming Commerce

STIMULUS-ORGANISM-RESPONSE FACTORS DRIVING IMPULSE BUYING IN LIVE-STREAM SHOPPING ENVIRONMENTS: A SYSTEMATIC REVIEW

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Criteria	Inclusion	Exclusion
Language	English	Non-English
Publication Type	Peer-reviewed journal articles	Books, reviews, theses, or proceedings
Publication Year	2020 - 2025	< 2020
Research Focus	Studies analyzing impulse buying within live-streaming commerce contexts	Studies limited to social commerce, e-commerce, or offline retail
Accessibility	Open access or full-text available	Restricted access or unavailable full text

These criteria were established to ensure that only high-quality, relevant, and accessible empirical studies were synthesized. Studies failing to meet these requirements were excluded from further analysis.

Screening and Study Selection

A multi-stage screening process was performed in accordance with PRISMA guidelines. The procedure included a title and abstract article screening, a full-text evaluation article, and an eligibility confirmation. Duplicates were removed using automated tools, and two independent reviewers verified all decisions to reduce bias. The PRISMA flow diagram below shows the number of records that were identified, screened, and included at each stage of the process.

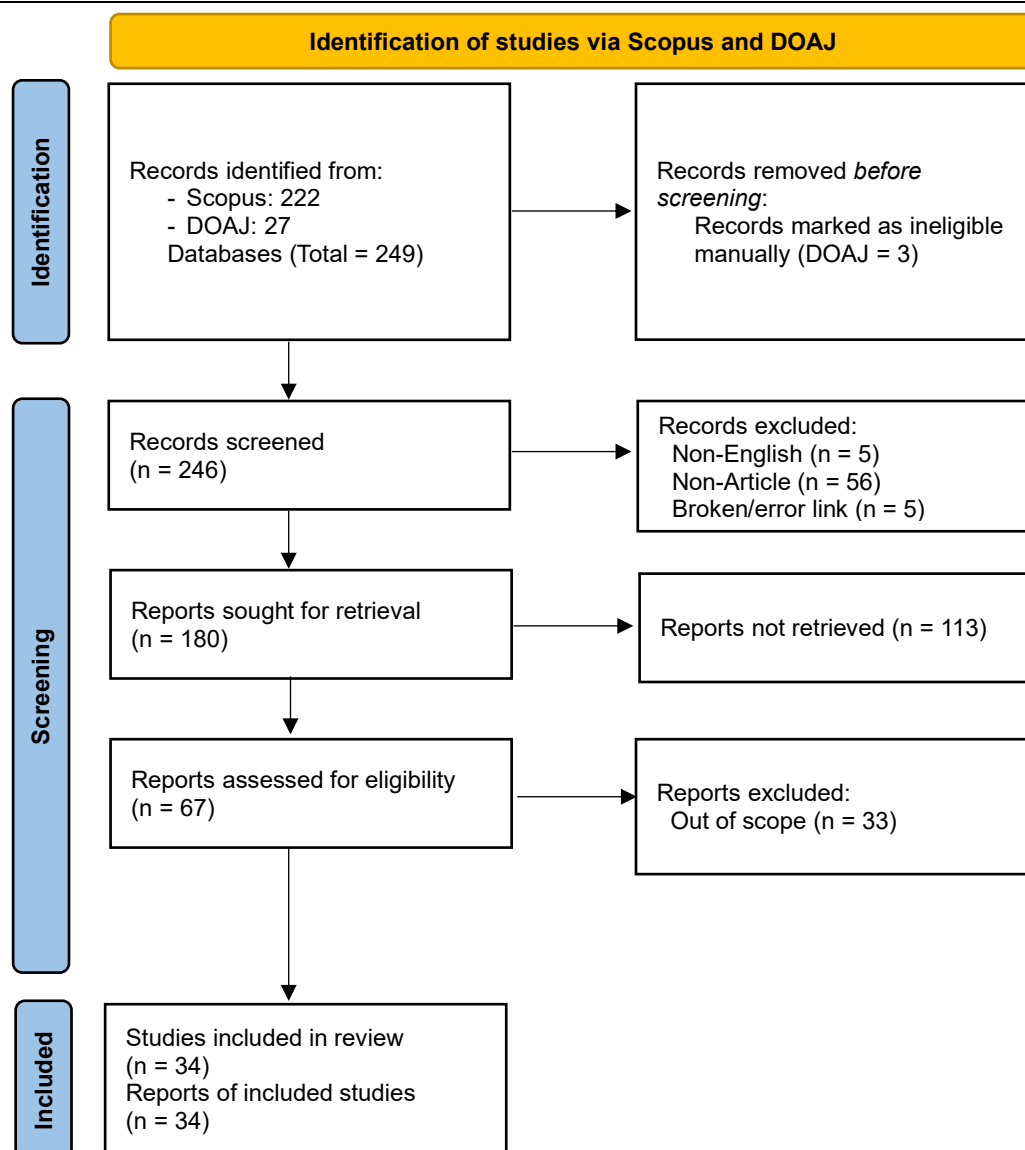


Image 1: PRISMA - Impulse Buying in Live-Streaming Commerce

Data Extraction

To ensure consistency and comparability across studies, data extraction was carried out using a structured data matrix designed by following attributes were systematically recorded for each included paper:

- Author(s) and publication year
- Country or region of study
- Sample characteristics
- Research methodology and analytical techniques
- Theoretical framework
- External stimuli examined (S)
- Internal psychological mechanisms (O)
- Behavioral outcomes (R)
- Key empirical findings

The extracted data were structured into thematic categories to facilitate cross-study comparison and identify recurring theoretical patterns. This process followed the methodological rigor recommended for SLRs in the social sciences (Tranfield, Denyer and Smart, 2003).

Synthesis Approach

A narrative synthesis technique to integrate and interpret findings from the selected studies. This qualitative technique is well-suited to research fields characterized by theoretical and methodological diversity, as it allows for the systematic organization, comparison, and interpretation of results across heterogeneous studies (Popay *et al.*, 2006). Rather than relying on statistical aggregation, the narrative synthesis focuses on identifying patterns, relationships, and conceptual linkages among the variables examined in prior research. The synthesis proceeded in three stages. Initially, descriptive mapping was conducted to determine the distribution of studies across publication years, countries, theoretical frameworks, and methodological designs. This step provided an overview of the research landscape and revealed emerging trends in literature. Second, a thematic analysis was carried out to identify recurring concepts and patterns related to the stimulus (S), organism (O), and response (R) outlined in the S–O–R model. Themes were grouped inductively based on their conceptual similarity, with particular attention to social interaction cues, technological affordances, and emotional or cognitive mediators. Third, interpretive synthesis was applied to connect the identified themes into a coherent conceptual narrative that explains how technological, social, and psychological factors jointly facilitate impulse buying behavior in live-streaming commerce contexts. Throughout the process, findings were continuously compared to studies to ensure consistency and validity. Discrepancies in results or theoretical interpretations were critically examined and discussed considering contextual factors such as cultural setting, platform characteristics, and consumer demographics. The final synthesis yielded an integrative framework that highlights dominant research patterns, theoretical gaps, and directions for future inquiry.

RESULTS

This systematic review synthesizes recent research on impulse buying in live-streaming commerce through the Stimulus-Organism-Response (S-O-R) framework. Following PRISMA guidelines, 34 empirical studies conducted between 2020 and 2025 were identified from Scopus and DOAJ databases. The review categorizes external stimuli into four main domains: streamer attributes, platform interactivity, promotional strategies, and social engagement. These stimuli influence internal psychological states such as enjoyment, trust, emotional arousal, and flow, which transform impulse buying and purchase intention. Most studies employed quantitative cross-sectional designs and were concentrated in Asian markets, limiting cross-cultural generalization. The synthesis highlights the dominance of emotional and social mechanisms in triggering Impulse Buying and identifies gaps in longitudinal, experimental, and cross-national research. The review concludes with a conceptual model and practical recommendations for developing ethical and engaging live-commerce strategies.

CONCEPTUAL FOUNDATION

The S-O-R framework is the most widely utilized theoretical model for studies of impulse buying in live-streaming commerce. It appears explicitly across a large portion of the reviewed literature and structures the relationships between external stimuli, internal psychological processes, and impulsive purchasing behaviors (Lee and Chen, 2021; Chen *et al.*, 2022; Lou *et al.*, 2022; Yang *et al.*, 2022; Huo *et al.*, 2023). Several studies extend S-O-R with additional ideas to explain specific mechanisms. These include para-social interaction theory to explain streamer-viewer relationships (Huang and Mohamad, 2025; Liao *et al.*, 2025), flow theory to capture immersive experiences (Huo *et al.*, 2023; Li, Feng and Zhao, 2024), social presence theory to measure psychological closeness (Andika *et al.*, 2025), and the Technology Acceptance Model (TAM) to examine the role of perceived usefulness and enjoyment (Cynthia, 2024). These extensions indicate that while S-O-R provides the core structure, specialized theories deepen understanding of how specific stimuli influences internal states within live-streaming environments.

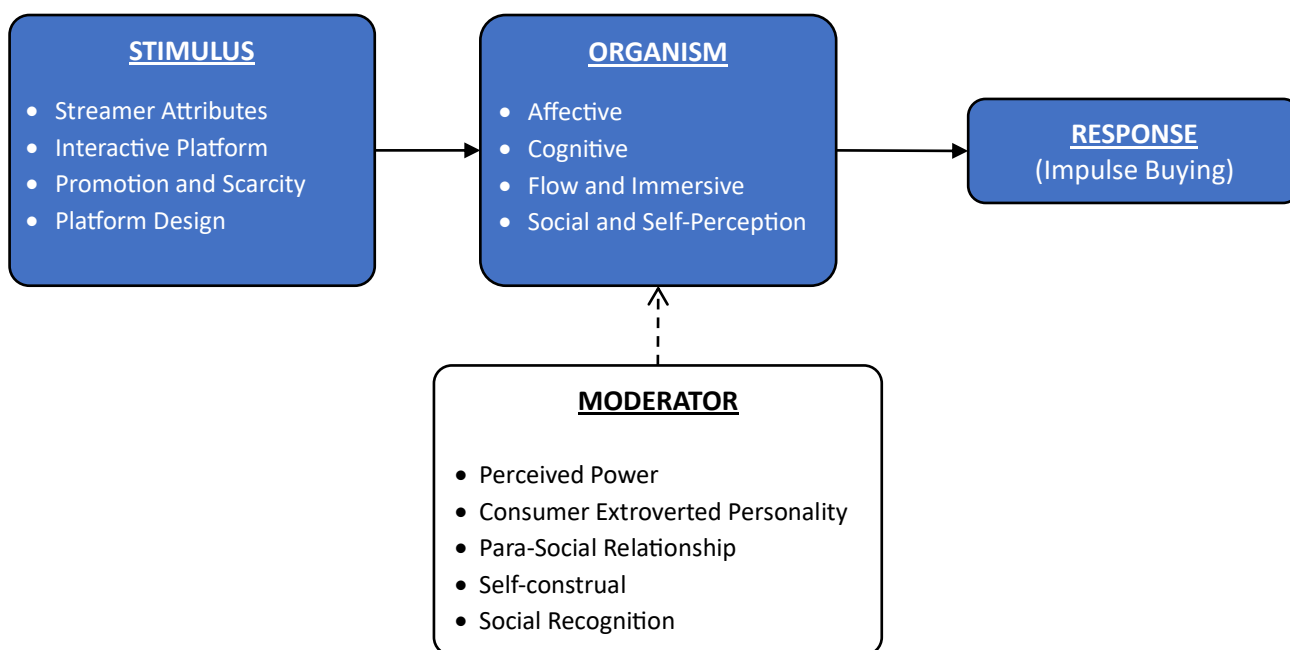


Image 2: Conceptual Model of Stimulus Organism Response

Stimulus: External Factors Driving Impulse Buying

The reviewed studies identify multiple categories of external stimuli that shape consumer behavior during live streams. These stimuli can be grouped into four major clusters:

1. **Streamer Attributes**
Attributes such as expertise, professionalism, charisma, and attractiveness consistently function as strong triggers of impulse buying. These characteristics enhance viewer trust and emotional engagement (Lee and Chen, 2021; Chen, Luo and Zhou, 2024; Li, Chen and Zhu, 2024). Streamer responsiveness and entertainment value also strengthen consumer involvement and encourage spontaneous purchases.
2. **Interactive**
Real-time interactivity, co-viewer interaction, and social presence increase emotional contagion and create a sense of community, which heightens impulsive tendencies (Ye, Zhou and Duan, 2022; Qu *et al.*, 2023; Indriastuti *et al.*, 2024). Social influence and herd behavior are a major factor in resolving purchase decisions.
3. **Promotion and Scarcity**
Scarcity messaging, flash sales, limited time offers, and exclusive discounts remain central drivers of impulse buying. Studies show that time pressure intensifies the urge to purchase and reduces consumers' cognitive evaluation of alternatives (Lo *et al.*, 2022; Zhang, Zhang and Wang, 2022; Qu *et al.*, 2023).
4. **Platform Design**
Platform design elements such as vividness, realness, interface quality, logistics service quality, and information richness also operate as powerful stimuli. Live atmosphere and immersive presentation formats support emotional engagement and reduce perceived uncertainty (Yang *et al.*, 2022; Xia, Chae and Xiang, 2024; Hoo *et al.*, 2025).

These findings demonstrate that impulse buying in live-streaming environments is not driven by a single factor, but results from a highly orchestrated combination of visual, social, emotional, and promotional stimuli.

Organism: Internal Psychological Mechanisms

Across the included studies, internal psychological states consistently serve as mediators between external stimuli and behavioral responses. These intermediary states can be classified into four distinct categories:

1. **Affective**
Positive emotions such as excitement, pleasure, arousal, and enjoyment are strong mediators linking external stimuli to impulse buying (Li *et al.*, 2021; Andika *et al.*, 2025; Zhu and Vijayan, 2025). Real-time engagement and persuasive streamer behavior increase enjoyment, which directly enhances impulsive tendencies.
2. **Cognitive**
Perceived value, usefulness, trust, and uncertainty shape how consumers interpret stimuli. High perceived value and trust drive purchase intention, while perceived risk can hinder impulsive purchases unless offset by strong promotional cues (Zhang, Zhang and Wang, 2022; Cynthia, 2024; Zhou and Li, 2025).
3. **Flow and Immersive States**
Flow experience is frequently reported as a powerful mediator. When viewers become fully immersed in the live stream, their cognitive resistance decreases, and impulse buying becomes more likely (Huo *et al.*, 2023; Li, Chen and Zhu, 2024; M. Xin *et al.*, 2025). Engagement acts similarly by linking platform atmosphere to impulsive responses (Yang *et al.*, 2022).
4. **Social and Self-Perception Mechanisms**
Sense of belonging, swift guanxi, psychological ownership, and self-efficacy provide additional insight into how social identity and self-concept influence impulse buying. These mechanisms are especially relevant in contexts involving community-oriented streams or sustainable consumption cues (Gong *et al.*, 2020; Tian, 2024).

These internal states operate together to convert external triggers into strong urges to buy.

Response: Behavioral Outcomes

Behavioral outcomes in the context of impulse buying in live-streaming commerce (LSC) are primarily centered on the act or intention of making an immediate, unplanned purchase. Within the dominant stimulus-organism-response (S-O-R) framework, (Lee and Chen, 2021; Chen *et al.*, 2022; Li, Wang and Cao, 2022; Lo *et al.*, 2022; Lou *et al.*, 2022; Yang *et al.*, 2022; Huo *et al.*, 2023; Qu *et al.*, 2023; Li, Chen and Zhu, 2024; Xia, Chae and Xiang, 2024; Chung *et al.*, 2025; Zhou and Li, 2025; Zhu and Vijayan, 2025), the "Response" component represents the consequence of the external stimuli (Stimulus) being filtered through the consumer's internal mechanisms (Organism). In summary, the behavioral outcome in LSC is overwhelmingly defined as the execution or intention of an unplanned purchase. The sources show a research trend moving from studying the general impulsive purchase to analyzing context-specific impulsive buying (e.g., clothing, cosmetics, food) and even investigating the post-purchase regret and return behavior associated with these highly stimulated transactions.

Moderator

The internal mechanisms, represented by the "Organism" (O) component in the Stimulus-Organism-Response (S-O-R) paradigm, include the cognitive and emotional states that translate external stimuli into behavioral outcomes. Within this context, Moderators are crucial factors that influence the strength or direction of the relationships between S and O, or between O and R. "Personality," here, refers to psychological dispositions, social perceptions, and relational factors that condition these effects, determining how a consumer processes the live streaming environment. Based on the synthetic results, seven distinct moderators related to personality and internal states that influence impulse buying behavior in live streaming commerce are detailed below:

1. **Perceived Power**
Perceived Power functions as a moderator in the relationship between popularity cues (streamer popularity and product popularity) and impulse purchase intention in live streaming commerce (Lou *et al.*, 2022). This factor is situated among the emotional and cognitive mechanisms in the Stimulus-Organism-Response (S-O-R) paradigm research focusing on how popularity drives impulse purchases (Lou *et al.*, 2022).
2. **Consumers Extroverted Personality**
The inherent personality trait of Consumers' Extroverted Personality acts as a moderator for impulsive purchase intention (Li, Wang and Cao, 2022). This moderation effect was examined in a study focused on the influence mechanism of interaction quality (which includes responsiveness, professionalism, informativeness, and personalization) in live streaming shopping (Li, Wang and Cao, 2022).
3. **Para-Social Relationship (PSR)**

The strength of the Para-Social Relationship (the consumer's perceived one-sided relationship with the streamer) serves as a moderator when investigating the impact mechanisms of consumer impulse buying in accumulative social live shopping. This factor conditions how live content design elements, such as information comprehensiveness and interactivity, translate into behavioral outcomes (Li *et al.*, 2025).

4. Self-construal

Self-construal, which relates to how individuals define themselves in relation to others, is identified as a moderator in research that explores the effect of live streaming atmospheric cues on consumer impulse buying. Atmospheric cues examined include expertise, interaction, and entertainment cues, and self-construal influences how these cues mediate the flow experience (Meiling Xin *et al.*, 2025).

5. Social Recognition

Social recognition operates as a moderator in the mechanism by which a live streamer's behavior characteristics (attractiveness, professionalism, interactivity, and uniqueness) affect consumers' impulsive buying. This mechanism focuses on perceptions of hedonic and utilitarian value as mediators (Yu, Tang and Gao, 2025).

DISCUSSION

This review demonstrates that impulse buying in live-streaming commerce results from the combination of social, technological, and promotional stimuli that activates affective, cognitive, and immersive psychological states. These internal mechanisms reinforce Impulse Buying and illustrate how live-streaming environments combine multiple cues simultaneously. The findings indicate that no single stimulus dominates the impulse-buying process. Instead, a coordinated configuration of cues shapes consumer responses. Streamer attributes, platform interactivity, scarcity promotions, and vivid interface design significantly influence impulsive tendencies. Prior studies highlight the power of scarcity messaging, limited time offers, and immersive platform features in attracting attention and accelerating decision-making. This pattern aligns with broader social commerce research, which suggests that digital stimuli produce stronger effects when combined.

Internal psychological mechanisms operate as central mediators. Affective states such as excitement, pleasure, and arousal consistently link stimuli to impulsive behavior. Cognitive mechanisms, including perceived value, trust, and perceived usefulness, shape whether consumers interpret stimuli as credible or risky. Flow experience repeatedly emerges as a key pathway through which immersion reduces cognitive resistance and facilitates impulse buying. Social and identity-based mechanisms such as parasocial interaction, swift guanxi, and psychological ownership further strengthen the connection between viewers and streamers, particularly in community-driven live streams.

These findings align with previous work in social commerce, but the real-time nature of live streaming amplifies emotional arousal and social presence beyond what occurs in traditional e-commerce. Instant feedback loops and synchronous interaction intensify persuasion and accelerate decision-making. The review also shows that cognitive risk can be overridden by engaging streamer cues and persuasive promotional tactics, suggesting that immersive contexts weaken typical risk-assessment processes.

Another notable finding concerns moderators. Scarcity effects do not operate independently. They interact with psychological dispositions such as perceived power, extroversion, para-social relationship strength, self-construal, and social recognition. These interactions show that impulse buying is not only stimulus-driven but also shaped by deeper personality and identity-related processes. Methodologically, most studies rely on cross-sectional surveys and self-reported data, which limits causal inference and raise concerns about common-method bias. Only a few studies use behavioral or experimental designs. Furthermore, research is concentrated in Asian markets, particularly China and Southeast Asia, which restricts cross-cultural generalizability.

The synthesis underscores the value of combining S-O-R with complementary theories. Parasocial interaction theory clarifies streamer-viewer relationships. Flow theory explains immersion-driven cognitive reduction. Social presence theory captures psychological closeness in interactive streams. Together, these perspectives strengthen explanatory power and point to the importance of real-time, dynamic processes that traditional S-O-R applications often overlook. Practical implications include the need for platforms to enhance social presence ethically, ensure streamer professionalism, design immersive yet non-manipulative interfaces, and apply scarcity-based promotions responsibly. Safeguards should be implemented to prevent excessive impulsive purchasing and post-purchase regret. Future research should adopt multi-method and longitudinal designs, expand cross-national comparisons, and investigate boundary conditions of parasocial interaction and flow. Greater attention to personality-based moderators and regulatory considerations will also advance theoretical and practical understanding.

CONCLUSION

This review analyzes empirical research on impulse buying within live-streaming commerce through the Stimulus-Organism-Response framework. The findings suggest that impulse buying in live-streaming settings is influenced by social, technological, and promotional stimuli. These external cues activate emotional, cognitive, and immersive psychological states that shape unplanned purchase behavior. Streamer attributes, platform interactivity, scarcity promotions, and vivid interface design play central roles in triggering impulsive tendencies. Internal mechanisms such as enjoyment, trust, emotional arousal, and flow consistently mediate these effects. Across the reviewed studies, emotional and social processes emerge as the dominant pathways. Real-time interaction, parasocial interaction, and perceived social presence enhance the connection between consumers and streamers. These effects are further shaped by moderators related to personality and self-construal. The findings also reveal important methodological and contextual patterns. Most studies employ cross-sectional designs and focus on Asian markets, which limits causal inference and cross-cultural generalizability.

This review contributes to theory by integrating technological, social, and psychological drivers into a coherent conceptual framework. It demonstrates that live-streaming commerce operates through dynamic, synchronous mechanisms that differ from traditional e-commerce. The review also highlights several gaps that future studies should address. These include the need for experimental and longitudinal designs, greater attention to personality-based moderators, and broader cross-national samples. For practice, the findings suggest that platforms and streamers should design live-commerce environments that promote authenticity, trust, and ethical engagement. Promotional strategies must be implemented with care to avoid excessive pressure or consumer harm. In conclusion, this review clarifies the mechanisms that drive impulse purchasing in live-streaming commerce and identifies strategies for advancing theory and practice. It offers a foundation for future research aimed at understanding how social, technological, and emotional forces interact in emerging digital retail environments.

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