

# **Impact of Interactivity in E-commerce Live Streaming on Consumers' Impulse Purchase Intention: The Mediating Role of Flow Experience and the Moderating Role of Affective Trust**

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**Abstract:** With the rapid development of the digital economy, e-commerce live streaming has become an important retail format that integrates real-time product presentation, social interaction, and instant purchasing. Specifically, interactivity is conceptualized through two dimensions: host-audience interaction and bullet-screen interaction. The study further investigates the mediating role of flow experience and the moderating role of affective trust in this relationship. The results show that interactivity in e-commerce live streaming has a significant positive effect on consumers' impulse purchase intention. Among the two dimensions, bullet-screen interaction exerts a stronger effect than host-audience interaction. These findings enrich research on consumer behavior for platforms and live streamers seeking to improve interactive design, enhance consumer immersion, and promote purchase conversion.

**Keywords:** E-Commerce Live Streaming; Host-Audience Interaction; Bullet-Screen Interaction; Flow Experience; Affective Trust; Impulse Purchase Intention.

## **1. Research Background**

By focusing on improving quality, coming up with new content ideas and using different business models, the industry is now actively answering to fiercer market competition and the changing expectations that consumers have today. These ways of interacting don't just help consumers get a clearer idea about the products, they also build up stronger trust in the whole live-streaming setting, and this makes it more likely that people will make an impulse purchase.

### **1.1 International Research**

The first strand looks at how hosts and

consumers interact in real time when people do live-stream e-commerce. Hosts very often work like opinion leaders. Their personal traits, how good they are at the job, and how well they communicate all matter a lot for how effective the live-stream sales end up being. Bhattachar and Sanford found that what makes consumers buy things gets impacted a lot by things like how trustworthy the information from online influencers is, and how well the influencer's image matches up with the product they are selling [1]. Park went on to say that when people feel more interaction with the stream, they are more likely to keep paying attention, have fun, and get fully absorbed into what is happening [2]. Joshua and Deepti said that live streamers, who are social media influencers with big groups of followers, can make people more familiar with brands by making good live content and changing what their audience thinks [3].

The second part of the process is that consumers can ask questions about products right in the real-time comment section. The live host can answer right away, using words to explain things and show the product off. This way, the info that gets passed along is more accurate than other channels.

The second strand concerns consumers can raise product-related questions in the real-time comment area, while hosts respond immediately through verbal explanations and product demonstrations, thereby achieving more precise information delivery. Sharma, drawing on conformity theory and interaction theory, examined how social cues in live-streaming interfaces affect consumers' psychological decision-making processes and subsequently influence their purchase intention [4]. Khachatryan also noted that consumers can directly ask hosts about product information through bullet-screen comments, and hosts can provide timely feedback according to consumers' questions, thus forming synchronous

two-way interaction in real time [5].

### 1.2 Research in China

Chinese research has mainly examined how live streamers and real-time bullet-screen comments influence consumers' impulse purchase intention. Wang Yonggui et al. argued that streamer interactivity can enhance consumers' sense of presence. The professionalism of streamers may serve as a signal of product quality, while the authenticity and reputation of the product information they recommend are closely associated with consumer trust; together, these streamer-related characteristics ultimately affect consumers' purchase intention [6]. Wu Bing et al. empirically found that platform characteristics, live-streaming page features, live interaction, and streamer attributes all exert positive effects on consumers, thereby inducing impulse buying behavior [7]. Liu Yiqin et al. note that in real-time situational interactions, host-audience interaction not only achieves the effects of one-on-one interpersonal communication but also transcends the constraints of time and space, thereby enhancing the emotional impact and persuasive effectiveness of interpersonal communication [8].

In recent years, the online live-streaming industry has developed rapidly and become widely popular. Bullet-screen interaction has been increasingly integrated into e-commerce live-streaming scenarios, and its immediacy and interactivity are highly compatible with the interactive nature of live streaming. Liu Yang found that live-streaming interaction enhances consumers' perceived value through two key mechanisms: first, the immersive atmosphere created by bullet-screen comments strengthens hedonic value by generating temporary escapism and impulse tendencies; second, the information transparency enabled by real-time interaction reduces uncertainty and thereby enhances utilitarian value [9]. Zhao Shumei et al. suggested that bullet-screen interaction plays an important mediating role. When watching live videos, consumers discuss video content with one another, and bullet-screen comments significantly enhance interactivity by bringing together viewers with shared opinions and interests, thereby strengthening their sense of participation and social identification through continuous interaction [10].

### 1.3 Literature Review and Research Gaps

Although existing studies in China and abroad have examined the interactive characteristics of e-commerce live streaming and their effects on consumers' impulse buying behavior, several research gaps remain. First, the real-time and two-way interactivity that characterizes e-commerce live streaming has not yet been clearly classified into distinct dimensions. In particular, the specific paths through which different forms of interactivity influence consumers' impulse purchase intention require further investigation. Second, live-streaming commerce creates stronger immersive and affective experiences. However, limited research has integrated the complete mechanism linking interactivity, flow experience, affective trust, and impulse purchase intention into a unified theoretical framework.

To address these gaps, this study constructs a measurement framework based on two dimensions: host-audience interaction and bullet-screen interaction. Drawing on perceived value theory, this study further introduces flow experience as a mediating variable and affective trust as a moderating variable. The findings are expected to provide both theoretical contributions to research on live-streaming consumer behavior.

## 2. Theoretical Foundations and Research Hypotheses

### 2.1 Perceived Value Theory

Perceived value theory suggests that consumers' evaluation is formed through a comparison between perceived benefits and perceived costs. This overall value assessment serves as an important basis.

### 2.2 Interactivity and Consumers' Impulse Purchase Intention

In terms of bullet-screen interaction, real-time comments and viewer-to-viewer communication create a participatory and socially engaging atmosphere. Bullet-screen interaction enables consumers to observe others' opinions, questions, feedback, and purchase-related discussions in real time, which may strengthen their sense of social presence and increase their willingness to remain in the live-streaming room. Such an interactive atmosphere can further activate consumers' emotional responses and increase the likelihood of impulse purchase

intention. Accordingly, the following hypotheses are proposed:

H1: A positive interactive atmosphere positively affects consumers' impulse purchase intention.

H1a: Host-audience interaction positively affects consumers' impulse purchase intention.

H1b: Bullet-screen interaction positively affects consumers' impulse purchase intention.

### 2.3 The Mediating Effect of Flow Experience

Flow experience refers to a psychological state in which individuals become fully absorbed in an activity, accompanied by intense concentration, enjoyment, and a weakened sense of time. High-quality interaction can be an important antecedent of consumers' flow experience. When consumers receive timely responses from hosts, participate in real-time bullet-screen communication, and perceive a lively interactive atmosphere, they are more likely to become immersed in the live-streaming process.

Such flow experience may further strengthen consumers' impulse purchase intention. Consumers in a flow state tend to devote greater attention to the live-streaming content, experience stronger enjoyment, and make purchase decisions more quickly. Therefore, this study argues that interactivity in e-commerce live streaming influences consumers' impulse purchase intention through the mediating mechanism of flow experience. Accordingly, the following hypotheses are proposed:

H2: Flow experience mediates the relationship between interactivity and consumers' impulse purchase intention.

H2a: Flow experience mediates the relationship between host-audience interaction and consumers' impulse purchase intention.

H2b: Flow experience mediates the relationship between bullet-screen interaction and consumers' impulse purchase intention.

### 2.4 The Moderating Effect of Affective Trust

When consumers are immersed in the live-streaming process, affective trust may influence how this immersive experience is translated into purchase intention. Based on this logic, Formulate a hypothesis:

H3a: Affective trust positively moderates the relationship between interactivity and consumers' impulse purchase intention.

H3b: Affective trust moderates the relationship between flow experience and consumers' impulse purchase intention.

The model framework for this paper is shown in Figure 1.

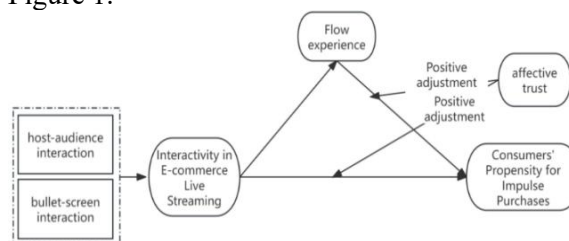


Figure 1. Model Framework

## 3. Research Design

### 3.1 Sample Collection

This study collected data through Wenjuanxing, a widely used online survey platform in China. The respondents were consumers who had experience watching e-commerce live streams on major platforms such as Douyin, Kuaishou, Taobao, and Pinduoduo. To improve the representativeness of the sample, both online and offline survey methods were adopted.

The survey yielded 311 completed questionnaires. After 43 invalid questionnaires were excluded, 268 valid responses remained for empirical analysis, with a valid response rate of 86.17%.

### 3.2 Variable Measurement

The items were designed primarily based on the research findings of scholars both in China and abroad to create a content-validated scale, as shown in Table 1.

Table 1. Content-Validated Scale

Measurement variables	Number of items in the question	Title	Number
host-audience interaction	4	When watching e-commerce live streams, I feel that communication with the host flows very smoothly.	HI1
		When watching e-commerce live streams, I expect the host to respond to my questions promptly.	HI2
		When watching e-commerce livestreams, the host's interactions make me feel valued.	HI3
		When watching e-commerce live streams, I find the host's interactive approach quite engaging.	HI4
bullet-screen	4	While watching e-commerce live streams, I find the bullet chat interaction incredibly fun.	BS11

interaction		When watching e-commerce live streams, I think the atmosphere created by the comments is great.	BSI2
		When watching e-commerce live streams, the bullet chat interaction makes me feel highly engaged.	BSI3
		While watching the e-commerce live stream, I found the quality of the bullet chat interaction in this live stream room to be quite high.	BSI4
Flow Experience	4	While watching e-commerce live streams, I became absorbed and forgot everything around me.	FLO1
		When watching e-commerce live streams, I enjoy the entire process rather than focusing on the outcome.	FLO2
		When watching e-commerce live streams, I can clearly follow the host's pace and steps.	FLO3
		Watching e-commerce live streams gives me a sense of joy and satisfaction from exploring.	FLO4
affective trust	4	I believe the host of this e-commerce livestream is sincere and trustworthy.	POS1
		I believe the host of this e-commerce live stream will fully consider the interests of consumers.	POS2
		Even if minor issues arise, I trust this live stream will provide thorough after-sales service.	POS3
		I would gladly recommend this e-commerce live stream to my friends or family.	POS4
impulsive purchase intention	4	In e-commerce live streams, I'm prone to impulsive buying on a whim.	IPP1
		In e-commerce live streams, my purchasing decisions become incredibly swift and unthinking.	IPP2
		In e-commerce live streams, I'm easily swayed by the lively atmosphere and end up making a purchase.	IPP3
		In e-commerce live streams, I end up buying items I hadn't planned on purchasing at all beforehand.	IPP4

4. Empirical Analysis

4.1 Reliability and Validity Analysis

The results are reported in Table 2. The factor

loadings of all measurement items ranged from 0.78 to 0.88, which indicates good convergent validity. In terms of reliability, all values were above the commonly accepted threshold of 0.70, suggesting strong internal consistency.

Table 2. Reliability and Validity Analysis

Variable	Number	Factor loadings	Cronbach's α	AVE	CR
host-audience interaction	HI1	0.82	0.91	0.72	0.91
	HI2	0.85			
	HI3	0.88			
	HI4	0.85			
bullet-screen interaction	BSI1	0.79	0.89	0.68	0.89
	BSI2	0.83			
	BSI3	0.85			
	BSI4	0.82			
Flow Experience	FLO1	0.86	0.92	0.75	0.92
	FLO2	0.88			
	FLO3	0.87			
	FLO4	0.85			
affective trust	POS1	0.84	0.90	0.70	0.90
	POS2	0.87			
	POS3	0.83			
	POS4	0.81			
impulsive purchase intention	IPP1	0.8	0.88	0.65	0.88
	IPP2	0.82			
	IPP3	0.83			
	IPP4	0.78			

4.2 Main Effect Analysis

AMOS was used to estimate the path coefficients of the main effects, and the results are reported in Table 3. A positive interactive atmosphere had a positive effect on consumers'

impulse purchase intention ( $\beta = 0.28, p < 0.01$ ), thereby supporting H1.

When the interactive atmosphere was further divided into different dimensions, bullet-screen interaction showed a stronger direct effect ( $\beta = 0.28, p < 0.01$ ), supporting H1b. Host-audience

interaction also had a significant direct effect,  $\beta = 0.19, p < 0.05$ ), supporting H1a. but its path coefficient was relatively smaller ( $\beta$

**Table 3. Analysis of Main Effects**

Suppose	Path	Path coefficient	95% confidence interval		P-value	Conclusion
H1	A positive interactive atmosphere → impulsive purchase intention	0.28	0.12	0.44	0.001	Establishment
H1a	Host-audience interaction → impulsive purchase intention	0.19	0.05	0.23	0.021	Establishment
H1b	Bullet-screen interaction → impulsive purchase intention	0.28	0.12	0.44	0.001	Establishment

### 4.3 Mediation Effect Analysis of Flow Experience

To test the mediation effect of flow experience, this study utilized structural equation modeling; Table 4 displays the relevant results. Further analysis of the two interaction dimensions showed that both mediation paths were significant. Specifically, the indirect effect of bullet-screen interaction on impulse purchase

intention through flow experience was 0.13 ( $p < 0.01$ ), supporting H2b. The indirect effect of host-audience interaction through flow experience was 0.11 ( $p < 0.01$ ), supporting H2a. These findings suggest that both forms of interaction can stimulate consumers' impulse purchase intention by enhancing their flow experience, with bullet-screen interaction showing a slightly stronger mediating effect.

**Table 4. Mediating Effect Analysis of Flow Experience**

Suppose	Path	Path coefficient	95% confidence interval		P-value	Conclusion
H2	Interactivity → Flow Experience → impulse purchase intention	0.24	0.11	0.37	0.001	Establishment
H2a	host-audience interaction → Flow Experience → impulse purchase intention	0.11	0.04	0.19	0.002	Establishment
H2b	Bullet-screen interaction → Flow experience → impulse purchase intention	0.13	0.06	0.21	0.001	Establishment

### 4.4 Moderation Effect Analysis of Affective Trust

In the current study, SPSS was applied to test the moderating role of affective trust, with the corresponding results summarized in Table 5. The model included interactivity, flow experience, affective trust, and their interaction terms as predictors.

The results show that interactivity ( $\beta = 0.38, p < 0.001$ ), flow experience ( $\beta = 0.45, p < 0.001$ ), and affective trust ( $\beta = 0.22, p = 0.001$ ) all had significant positive effects on consumers'

impulse purchase intention. More importantly, affective trust showed a dual moderating effect. It positively moderated the relationship between interactivity and impulse purchase intention ( $\beta = 0.15, p = 0.005$ ). However, affective trust negatively moderated the relationship between flow experience and impulse purchase intention ( $\beta = -0.11, p = 0.018$ ), suggesting that when affective trust is higher.

The model explained 58% of the variance in consumers' impulse purchase intention ( $R^2 = 0.58$ ), indicating that the model had strong explanatory power.

**Table 5. Analysis of the Moderating Effect of Emotional Trust**

Variable	Standardized Path Coefficient	95% confidence interval	P-value
Interactivity	0.38	[0.25, 0.51]	0.001
Flow Experience	0.45	[0.33, 0.57]	0.001
Emotional Trust	0.22	[0.10, 0.34]	0.001
Affective Trust*Interactivity	0.15	[0.05, 0.25]	0.001
Affective Trust*Flow Experience	-0.11	[-0.20,-0.02]	0.001
$R^2$	0.58		

## 5. Conclusions and Practical Implications

### 5.1 Research Conclusions

Combining the immediacy of video-based interaction with the convenience of online purchasing, providing consumers with an immersive online shopping environment that

integrates product presentation, real-time communication, and instant transaction. The main conclusions are as follows.

First, the effect of bullet-screen interaction is particularly prominent. Further analysis indicates that the effects of different interaction dimensions vary. Bullet-screen interaction shows a stronger driving effect, whereas host-audience interaction, although also significant, has a relatively weaker effect ( $\beta = 0.19$ ,  $p < 0.05$ ). This may be because, in the collective environment of live streaming, hosts often find it difficult to provide highly personalized interaction for every viewer. By contrast, bullet-screen interaction creates a stronger sense of collective participation, which can more easily activate consumers' herd mentality and stimulate unplanned purchase decisions.

Second, the pathway of bullet-screen interaction is more pronounced. This suggests that bullet-screen interaction has a stronger effect. One possible explanation is that bullet-screen interaction enables real-time information sharing and social support among viewers, which can stimulate curiosity and participation, helping consumers enter a state of high concentration and weakened time perception, thereby strengthening unplanned purchase impulses.

Third, affective trust shows a dual moderating role in the influence mechanism. Indicating that consumers with higher affective trust are more likely to transform interactive experiences into purchase intention. This finding suggests that affective trust may function not only as a psychological catalyst for purchase conversion, but also as a factor that makes consumers' decision-making process more rational when trust reaches a relatively high level. In this sense, affective trust may weaken, to some extent, the impulse purchase tendency triggered solely by immersion.

## **5.2 Practical Implications**

First of all, platforms should enhance the bullet-screen interaction function to create a more immersive shopping environment. Since bullet-screen interaction delivers better engagement outcomes than direct communication between live streamers and viewers, platforms need to treat the bullet-screen feature as a core component of interactive design. In addition, platforms can roll out a tag-based comment system that guides users to adopt standardized tags such as "Question", "Feedback" and

"Recommendation", facilitating smoother information exchange and interactions. Equipped with a bullet-screen data dashboard, operators are able to track real-time interaction trends and user sentiment, enabling live streamers to promptly adjust their wording and content delivery accordingly.

Both platforms and their hosts need to work on making the flow experience better designed, and cut down the length of consumers' decision making paths. Our results show that flow experience works like a key psychological pathway that makes consumers get deeply into live-streaming settings and end up with impulse purchase plans. When it comes to content design, a story structure that goes "problem-pain point -solution" can work well. It lets hosts clearly share the main value of the live stream within just the first minute. For controlling the rhythm of the stream, hosts can build a wave-like pattern, where engaging high-energy moments and more relaxed breaks switch back and forth. During the breaks, they can tell stories from real users or show how people actually use the product, this keeps viewers paying attention all the time. On the part of helping viewers make purchase decisions, platforms need to make the buying steps simpler. They can put "one-click purchase" buttons right when hosts are explaining key product points, and also add extra services like installment plans and shipping insurance for buyers.

Next, live-streaming platforms need to build an emotional trust system to realize long-term value conversion. To begin with, platforms can elevate streamers' professionalism by rolling out a tiered certification mechanism, which mandates streamers to attend relevant training and pass assessments on product expertise. Furthermore, platforms can boost credibility by displaying third-party inspection reports, authentic user reviews, repeat purchase rates of identical goods and other credible supporting documents. Ultimately, both platforms and streamers ought to forge deeper emotional bonds with their most loyal followers. Concrete initiatives consist of offering birthday perks for members, exclusive discounts for frequent returning fans, hosting regular themed live broadcasts, and organizing online and offline fan engagement events. As a result, platforms can deliver sustainable long-term value and secure enduring competitive edges amid the volatile e-commerce marketplace.

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