The Effect of E-Commerce Live Streaming on Impulsive Buying Decisions Using S-O-R Framework

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Abstract. E-commerce live streaming has become popular because it lets customers see products up close and interact with sellers, encouraging impulsive purchases. This study explores the impact of E-Commerce Live Streaming on Impulsive Buying Decisions, with Trust and Flow Experience as mediating factors. This study aims to identify how streamer characteristics, streamer performance, and time pressure influence impulsive buying decisions. Using a quantitative and explanatory survey approach, the research surveyed 170 Indonesian respondents who have shopped via live streaming on platforms like Shopee, Tokopedia, Lazada, and Tiktokshop, employing purposive sampling. SEM-PLS analysis was conducted using SmartPLS 3. The findings indicate that streamer characteristics and performance significantly drive impulsive buying decisions through the mediating effects of Trust and Flow Experience. However, while positively impacting flow experience, time pressure did not considerably influence impulsive buying decisions. These findings offer insights for e-commerce platforms and content creators to enhance viewer engagement and optimize strategies.

Keywords: E-Commerce Live Streaming, Trust, Flow Experience, Impulsive Buying Decision, Viewer Engagement

1 Introduction

The rapid digital transformation in Indonesia has significantly altered the business landscape, with e-commerce emerging as a key pillar. E-commerce pertains to the online exchange of products and offerings through digital transactions and has become crucial for attracting customers and sustaining business growth globally[1]. In Indonesia, the dominant use of social media makes e-marketing an effective tool for product promotion and information dissemination[2]. Indonesia's e-commerce users have consistently increased yearly, reaching approximately 196.47 million by the end of 2023 [3]. This growth in online shopping facilitates easy product access, leading to increased impulsive buying [4]. Researchers have identified impulsive buying as a critical aspect of consumer behavior in e-commerce, especially in live-streaming commerce[5]. E-commerce live streaming has gained popularity [6], transforming how consumers interact and shop online and driving impulsive purchases [7], [8], [9]. Live streaming enables

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real-time engagement, enhancing trust and creating immersive shopping experiences that can trigger impulsive purchases [10]. It has become a focal point for e-commerce and social commerce development [11].

Previous research has identified motivations for viewers to participate in live streaming [12], [13],[14] and factors influencing impulsive buying decisions, such as streamer attractiveness, streamer characteristics, social presence [15], [10], [11], product attractiveness[16], and customer trust [17]. These factors impact impulsive buying behavior through their effects on trust and flow experience [18], [19]. However, while prior studies have explored these determinants, research on situational factors such as time pressure remains limited [8], [20], particularly in the Indonesian market.

Most existing research on live-streaming commerce has been conducted in China, necessitating validation in different regional contexts[21],[19]. The study contributes to the academic literature by presenting empirical findings from Indonesia and analyzing the mediating role of trust and flow experience on impulsive buying decisions. This research bridges a gap in understanding the influence of real-time online shopping broadcasts on consumer behavior in Indonesia's fast-growing digital economy.

2 Method

Applying the stimulus-organism-response (S-O-R) model, this research analyzes how e-commerce live streaming affects impulsive buying decisions by evaluating consumer reactions and behaviors concerning specific stimuli. This study includes an independent variable (E-Commerce Live Streaming), two mediating variables (Trust and Flow Experience), and a dependent variable (Impulsive Buying Decision). The dimensions of E-Commerce Live Streaming, as identified in the research by X. Li et al. [11], namely Streamer Characteristics (X1), Streamer Performance (X2), and Time Pressure (X3), according to studies by B. Sun et al. [22] and study by Cui et al.[23]. The dimensions of Impulsive Buying Decision, Trust (Z1), and Flow Experience (Z2) are also based on studies by X. Li et al. [11].

The population of this study comprises Indonesian e-commerce users, totaling 196.47 million users [3]. Since surveying the entire population is impractical, this study employed proportional sampling to ensure a representative distribution of respondents across platforms. 170 Indonesian respondents who have shopped via live streaming on Shopee, Tokopedia, Lazada, and Tiktokshop participated in this study. The sample was distributed proportionally, with 54.12% of respondents being Shopee users, 40.58% Tiktokshop users, 4.27% Tokopedia users, and 1.07% Lazada users. The selection of 170 respondents was based on feasibility constraints, including time and resource limitations. This study adopts a cross-sectional approach with both descriptive and verification purposes, utilizing an explanatory survey method. Data was collected through an online questionnaire.

The data analysis technique used is Structural Equation Modeling Partial Least Squares (SEM-PLS) using SmartPLS 3.0. The following hypotheses were formulated:

H1: Streamer characteristics have a significant positive effect on trust.

H2: Streamer performance has a significant positive impact on flow experience.

H3: Time pressure significantly influences flow experience.

H4: Trust has a positive and significant effect on impulsive buying decisions.

H5: Flow experience positively and significantly affects impulsive buying decisions.

H6: Streamer characteristics indirectly affect impulsive buying decisions through trust.

H7: Streamer performance indirectly influences impulsive buying decisions through flow experience.

H8: Time pressure indirectly influences impulsive buying decisions through flow experience.

3 Results and Discussion

3.1 Results

Characteristics and Experience of Respondents. The study surveyed 170 respondents, predominantly female (84.1%) and aged 17-25 (86.5%). Most respondents were students (72.35%), with a significant portion having a monthly income of less than Rp—2,000,000 (60.6%). The majority ever used Shopee (89.41%) and had shopped via live streaming more than five times (47.1%).

Evaluation of the Measurement Model. The outer loadings for each concept shown in Table 1 to evaluate the measurement model's reliability and validity.

Table 1. Outer Loadings

	Flow	IBD	SC	SP	TIME	TRUST
x1.1			0.845			
x1.2			0.858			
x2.1				0.834		
x2.2				0.906		
x3.1					0.783	
x3.2					0.747	
x3.3					0.865	
y1.1		0.831				
y1.2		0.792				
y1.3		0.877				
y1.4		0.833				
y1.5		0.739				
z1.1						0.794
z1.2						0.791
z1.3						0.803
z2.1	0.823					
z2.2	0.846					
z2.3	0.851					

Source: Author's work

Strong convergent validity was indicated by the fact that all constructs' factor loadings surpassed the acceptable criterion of 0.70, displayed in Table 1. Additionally, discriminant validity was assessed through cross-loading, as detailed in Table 2.

Table 2. Cross Loading

	Flow	IBD	SC	SP	TIME	TRUST
x1.1	0.383	0.220	0.845	0.231	0.341	0.554
x1.2	0.358	0.279	0.858	0.205	0.376	0.576
x2.1	0.416	0.288	0.236	0.834	0.178	0.337
x2.2	0.544	0.356	0.214	0.906	0.332	0.256
x3.1	0.274	0.419	0.377	0.306	0.783	0.398
x3.2	0.157	0.327	0.320	0.158	0.747	0.323
x3.3	0.338	0.535	0.324	0.238	0.865	0.318
y1.1	0.362	0.831	0.298	0.352	0.482	0.355
y1.2	0.347	0.792	0.308	0.262	0.315	0.370
y1.3	0.308	0.877	0.203	0.224	0.493	0.219
y1.4	0.382	0.833	0.155	0.365	0.580	0.240
y1.5	0.340	0.739	0.211	0.302	0.399	0.192
z1.1	0.368	0.254	0.535	0.244	0.323	0.794
z1.2	0.354	0.319	0.502	0.320	0.396	0.791
z1.3	0.420	0.254	0.546	0.231	0.302	0.803
z2.1	0.823	0.365	0.315	0.418	0.270	0.371
z2.2	0.846	0.382	0.444	0.423	0.260	0.467
z2.3	0.851	0.338	0.339	0.555	0.328	0.372

Source: Author's work

As shown in Table 2, all indicators for each variable exhibit the highest outer loading values for their respective constructs, confirming that they meet the criteria for discriminant validity. Additionally, to ensure the distinctiveness of all constructs, the Fornell-Larcker criterion was applied, as summarized in Table 3.

Table 3. Fornell Larcker Criterion

	Flow	IBD	SC	SP	TIME	TRUST
FLOW	0.840					
IBD	0.429	0.816				
SC	0.434	0.293	0.852			
SP	0.559	0.373	0.256	0.871		
TIME	0.343	0.556	0.421	0.303	0.800	
TRUST	0.479	0.347	0.663	0.333	0.428	0.796

Source: Author's work

According to Table 3, all indicators meet the criteria set for discriminant validity, as the correlation coefficients among variables are lower than the square roots of AVE. As presented in Table 4, construct validity and reliability were evaluated using Cronbach's Alpha and Composite Reliability. A construct is considered reliable when a construct's Cronbach's Alpha and Composite Reliability exceed the 0.70 threshold. Furthermore, discriminant validity is confirmed when the AVE surpasses the correlation values between constructs and the 0.5 threshold.

Table 4. Construct Reliability and Validity

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
FLOW	0.792	0.878	0.706
IBD	0.874	0.908	0.665
SC	0.622	0.841	0.726
SP	0.687	0.862	0.758
TIME	0.731	0.841	0.640
TRUST	0.711	0.838	0.633

Source: Author's work

According to Table 4, the Composite Reliability values exceeded 0.70, confirming the constructs' reliability. A test of the inner model was subsequently performed to determine the statistical significance of the correlations (see Fig. 1).

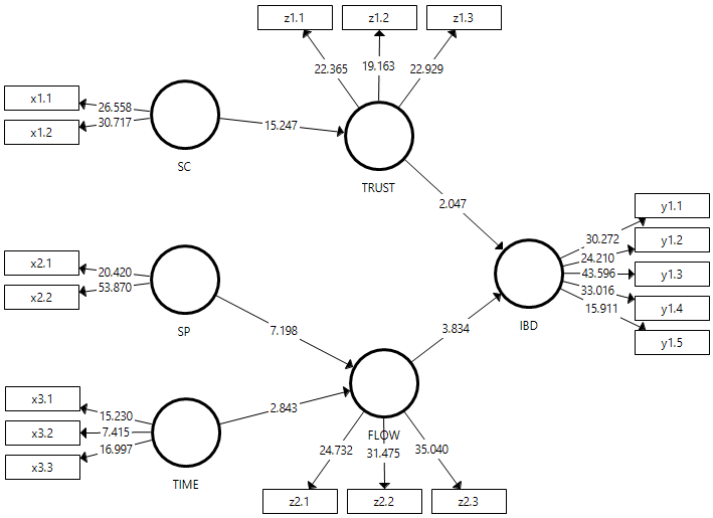

Fig. 1. Research model.

Source: Author's work

The R-squared values, presented in Table 5, indicate the proportion of variance explained by the independent variables.

Table 5. R-Square (R^2)

	R Square
FLOW	0.345
IBD	0.210
TRUST	0.440

Source: Author's work

Table 5 displays that the R-Square values indicate that the model represents 34.5% of the variance in Flow Experience, 44% in Trust, and 21% in Impulsive Buying Decision.

Table 6 displays the hypothesis test findings, including path coefficients, T-statistics, and P-values. The bootstrap method was employed on the sample for further testing.

Table 6. Hypothesis Testing Results

	Path Coefficient (β)	T Statistics (|O/STDEV|)	P Values	Hypothesis
H1: X_1 -> Trust	0.663	15.247	0.000	Accepted
H2: X_2 -> Flow Experience	0.501	7.198	0.000	Accepted
H3: X_3 -> Flow Experience	0.191	2.843	0.005	Accepted
H4: Trust -> IBD	0.183	2.047	0.041	Accepted
H5: Flow Experience -> IBD	0.341	3.834	0.000	Accepted
H6: X_1 -> IBD (via Trust)	0.121	2.006	0.045	Accepted
H7: X_2 -> IBD (via Flow Experience)	0.171	3.608	0.000	Accepted
H8: X_3 -> IBD (via Flow Experience)	0.065	1.716	0.087	Rejected

Source: Author's work

3.2 Discussion

According to Table 6, the hypothesis testing results reveal that streamer characteristics positively impact trust, aligning with the findings of X. Li et al. [11]. Viewers perceive positive streamer attributes, such as charisma and professionalism, which enhance trust and lead to impulsive purchases based on streamer recommendations. Streamer performance significantly impacts flow experience, with high-quality content and engaging interactions contributing to a flow state, affecting impulsive buying decisions (see Table 6). This supports the idea that viewers in a flow state are more susceptible to impulsive buying due to reduced cognitive processing.

The indirect effect analysis revealed that streamers' characteristics indirectly influence impulsive buying decisions through trust, while streamer performance influences impulsive buying through flow experience. Time pressure showed a positive direct effect on the flow experience but did not significantly influence impulsive buying decisions indirectly through flow experience (see Table 6), contrasting Cui et al. [23]. Differences in sample demographics and shopping behaviors could cause this disparity. A significant proportion of respondents in this study had prior experience in live-streaming shopping, suggesting potential familiarity with making quick decisions under time pressure [8]. However, the significant direct effect of flow experience on impulsive buying decisions emphasizes its essential role in live-streaming shopping.

4 Conclusion

This research applies the stimulus-organism-response model to analyze consumer behavior to determine how e-commerce live streaming affects impulsive buying decisions. The findings emphasize the significance of streamer characteristics, streamer performance, and the cultivation of flow experiences in stimulating impulse purchases.

These insights can inform strategies for live streaming platforms and content creators to enhance viewer engagement and optimize their strategy to increase sales.

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