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Social Presence in Live Streaming, Consumer Trust, and Flow Experience: Catalyst of Impulsive Buying

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Abstract
The appearance of e-commerce as a platform to introduce goods and services is one of the tools business people use to achieve their preferred marketing objective. For this reason, e-commerce integrates live streaming into its existing features; therefore, streamers can utilize it well to attract people to watch it. Moreover, this study uses the stimulus-organism-response model to accommodate the consequences of live-streaming creating social presence. After identifying the related variables, this study selects customer trust and flow experience as the outcomes expected to influence impulsive buying. Based on this circumstance, this study aims to prove and analyze the influence of social presence in live-streaming (SPLS) on customer trust (CT) and flow experience (FE) and the impact of CT and FE on impulsive buying (IB) by employing people purchasing goods during live-streaming as population. By utilizing purposive sampling and survey techniques, this study can get 240 respondents. After examining the causal relationship by variance-based structural equation model, this study demonstrates a positive inclination of SPLS towards CT and FE. Additionally, this positive mark is obtainable when investigating the tendency of CT and FE towards IB. By mentioning this fact, the streamer needs to communicate with its viewers; therefore, they trust and enjoy interacting, leading to impulsively buying the offered goods and services.

Keywords: Social Presence in Live Streaming, Customer Trust, Flow Experience, Impulsive Buying

1. Introduction

Impulsive buying is an unplanned purchase without numerous considerations. It is caused by spontaneous desire and emotion (Hausman, 2000). In the offsite context, its factors cover visual merchandising, store atmosphere, and display (Kertiana & Artini, 2019). This action is famous among Generation Y, orienting trend, mode, and instant satisfaction (Faber, 2010). By aligning with technology, *online* marketing appears (Sawarsa et al., 2023); therefore, marketers can promote their goods by live-streaming social media (Rodrigues et al., 2021), for instance, TikTok (Cui et al., 2022; Salsabila & Dewi, 2024; Zhang & Liu, 2021), Facebook, Kuaishou (Cui et al., 2022), Shopee, and Tokopedia (Agatha et al., 2023).

According to Chen and Lin (2018), live streaming enables real-time visual and auditory information transmission. Furthermore, Lee and Chen (2021) explain that this streaming creates a purchasing experience similar to a physical store, allowing consumers to communicate with a streamer and other buyers via live chat, which can provide a

sense of real-life interaction. Therefore, the streamer acting as the host can elevate the number of audience joining the room.

Based on the stimulus-organism-response model, social presence in live-streaming (SPLS) becomes a customer trust determinant, as confirmed by Rashid et al. (2022), Ratnawati and Hanoky (2023), Sawarsa et al. (2023), Thesia and Aruan (2023) and Hoang and Dang (2024). However, this tendency does not always exist; for example, Calysta and Suade (2024) exhibit no association between SPLS and CT. By mentioning the same S-O-R model, SPLS becomes the determinant of flow experience (FE), as affirmed by Rashid et al. (2022), Ratnawati and Hanoky (2023), and Sawarsa et al. (2023), Thesia and Aruan (2023), and Hoang and Dang (2024). Fortunately, consistent results for this relationship appear.

The relationship between customer trust and impulsive buying during live-streaming is also detected by mentioning the same S-O-R model. However, the results of the related investigation are still contrary. Several studies prove a meaningful tendency (Darmawan & Gatheru, 2021; Hoang & Dang, 2024; Salsabila & Dewi, 2024; Sawarsa et al., 2023; X. Sun et al., 2023). Budiarti et al. (2024) demonstrate a meaningless inclination between customer trust and impulsive shopping using the pay-later application. Lastly, the association between flow experience and impulsive buying also happens based on the S-O-R model of Swarsa et al. (2023). Nevertheless, the related research results are still various. In their study, Wu et al. (2020), Cui et al. (2022), Huo et al. (2023), Husada et al. (2023), Sawarsa et al. (2023), and Hoang and Dang (2024) demonstrate that flow experience is the antecedent of impulsive buying but Agatha et al. (2023) exhibit a pointless propensity.

Based on three gaps, this study intends to examine four relationships based on the users of various e-commerce platforms in Bandung, one of the large cities in Indonesia. Indonesia has the potential to become a profitable market for e-commerce development, including live-streaming shopping: Around 83.7% of its population buys the product during live-streaming (Annur, 2022). By investigating these relationships, this study expects to enrich the literature review of consumer behavior in the context of live-streaming.

2. Literature Review and Hypothesis Development

2.1. Stimulus-Organism-Response Model (S-O-R model)

The S-O-R model, developed by Mehrabian and Russell in 1974, is a critical concept in environmental physiology, consumer behavior, organizational culture, and leadership. According to this model, external stimuli come to internal processing, leading to emotional response and decision-making (Hochreiter et al., 2023). According to Xu et al. (2020), the SOR model refers to personal emotion and mental mediates the relationship between input and reaction. In their study, Kirman et al. (2021) demonstrate that socialization through media or friends can shape individual behavior. Therefore, the strong social presence in live-streaming can stimulate consumers to buy goods impulsively.

2.2. The relationship between social presence in live-streaming and customer trust

Social presence in live streaming is communication media to raise human interaction friendliness, warmness, and sensitivity (M. Li et al., 2022). This streaming can affect customers' understanding of the contents of streamers and establish intimate personal relationships, fostering calm and security for the individual and reducing worry and negative perceptions of others (Zhang & Liu, 2021). In their research, Rashid et al. (2022) demonstrate a positive association between social presence in live-streaming and customer trust. Similarly, Ratnawati and Hanoky (2023) and Sawarsa et al. (2023) confirm this propensity. Thesia and Aruan (2023) and Hoang and Dang (2024) affirm this tendency. Based on this information, hypothesis 1a is formulated below.
H_{1A}. The relationship between social presence in live streaming and customer trust is positive.

2.3. The relationship between social presence in live-streaming and flow experience

Besides affecting customer trust, social presence in live streaming (SPLS) positively influences the flow experience (FE). This statement is supported by Dong et al. (2023) using three components of SPLS: (1) coexistence, (2) communication, and (3) emotion to be associated with FE. According to Csikszentmihalyi (1975) cited by Dong et al. (2023), the flow experience occurs when the person is fully engaged in, focused on, and involved in activities at a specific time. Using a single construct of SPLS, Huo et al. (2023), Sawarsa et al. (2023), and Hoang and Dang (2024) demonstrate a positive association between SPLS and FE. Based on this information, hypothesis 1b is formulated below.

H_{1B}. The relationship between social presence in live streaming and flow experience is positive.

2.4. The relationship between consumer trust and impulsive buying

For customers, trust reflects their belief in the promises of streamers related to the products they offer. Furthermore, to implement it, the streamers must understand and meet customer desires by providing extraordinary service (Wongkitrungrueng & Assarut, 2020). The positive online comments from the buyers during live-streaming bring confidence to the other candidates to buy the products (M. Li et al., 2022). In their study, Darmawan and Gatheru (2021), Sawarsa et al. (2023), Hoang and Dang (2024), and Salsabila and Dewi (2024) confirm this explanation by demonstrating a positive association between customer trust and impulsive buying during live-streaming. Similarly, Sun et al. (2023) and Tian et al. (2023) prove this tendency regarding purchasing behavior and intention, respectively. Based on this information, hypothesis 2 is formulated below.

H_2. The relationship between customer trust and impulsive buying is positive.

2.5. The relationship between flow experience and impulsive buying

Flow experience is the situation created by the streamers to show their creativity and result in more exciting content during live streaming (Huang & Li, 2022). Flow experience, according to Wu and Li (2018), acts as a catalyst for impulsive buying. It happens because customers enjoy live-streaming (Sağtaş, 2023) and are involved in discussions on live chat (Dong et al., 2023). In their investigation, Wu et al. (2020), Cui et al. (2022), Huo et al. (2023), Husada et al. (2023), Sawarsa et al. (2023), and Hoang and Dang (2024) prove this argument by demonstrating a positive propensity of flow experience toward impulsive buying. Based on this information, hypothesis 3 is formulated below.

H_3. The relationship between flow experience and impulsive buying is positive.

2.6. Research Model

By mentioning hypotheses 1A, 1B, 2, and 3, the research model is obtainable in Figure 1. Because of social presence in live streaming, customer trust, flow experience, and impulsive buying behavior are unobservable variables; the oval is utilized by mentioning Ghozali (2021b).

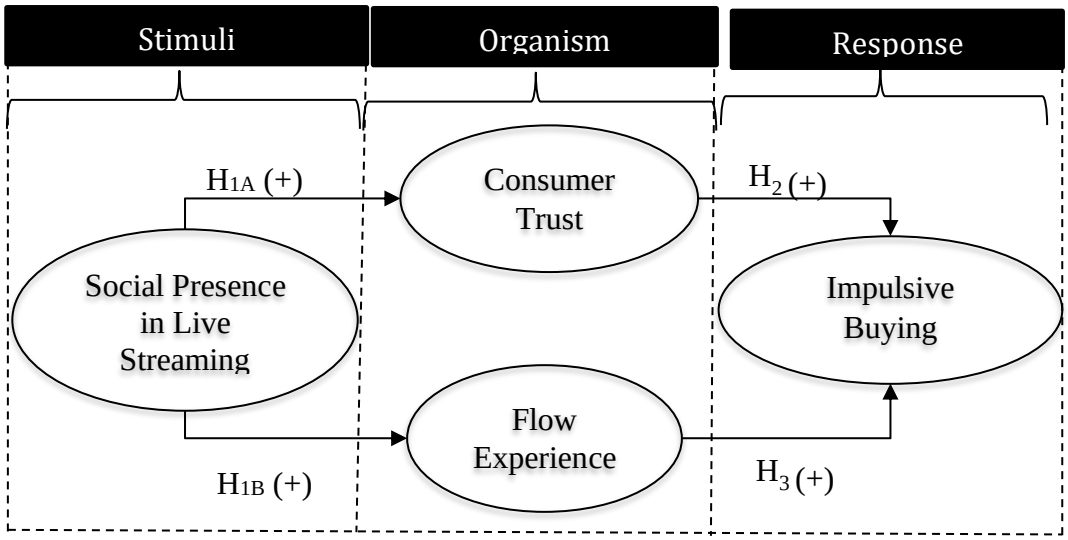

Figure 1: Research Model

Source: The research results in Sections 2.2, 2.3, 2.4, and 2.5

3. Methods

This study design is quantitative. According to Sugiyono (2019), this design aims to examine the hypothesis. In this context, the hypothesis type is causal, declaring the cause-and-effect relationship, as Hartono (2014) explains. Moreover, this study uses a survey with a questionnaire to collect the data, as Hartono (2014) explains. The indicators of social presence in live streaming (SPLS) come from Li et al. (2024). Additionally, consumer trust (CT), flow state (FS), and impulsive buying behavior (IBB) indicators come from Sawarsa et al. (2023), where a five-point Likert scale quantifies their item. One and five describe strong disagreement and agreement, respectively. The related items are in detail in Table 1.

Table 1: Variable Definition

Variable	Definition	Item	Scale	Source
Social presence in live-streaming	The presence and engagement of the customer with others create a community sense and personal connection between the streamer as the host and viewers (Lu et al., 2016).	- When interacting with streamers and other viewers, I exist in the correct live-streaming room (SPLS1). - The streamer pays attention to my interactive action (SPLS2). - The streamer pays attention to the interaction of the other viewers (SPLS3).	Likert	Li et al. (2024)
Consumer trust	Consumer beliefs on integrity and reliability of host during live-streaming (Sun et al., 2019).	- The information through live-streaming is trustable (CT1) - The streamer can be trusted (CT2). - The streamer cannot benefit me (CT3) - The received goods will be similar to the goods I view in live streaming (CT4)	Likert	Sawarsa et al. (2023)

Table 1: Variable Definition

Variable	Definition	Item	Scale	Source
Flow experience	The situation created by the streamers to show their creativity and result in more exciting content during live streaming (Huang & Li, 2022).	- I do not divert my attention when viewing LS (FS1). - I disregard what is happening when viewing live streaming (FS2). - I forgot everything to do when viewing live streaming (FS3). - I am comfortable with viewing live streaming (FS4). - I am interested in viewing live streaming (FS5). - I am glad when viewing live streaming (FS6).	Likert	Sawarsa et al. (2023)
Impulsive buying behavior	Spontaneous purchase because of the intense stimulation from sellers continually (Faber, 2010).	- I quickly receive offers during live streaming (IBB1) - I thoughtlessly buy goods when watching live streaming (IBB2). - I spontaneously buy goods offered during live streaming (IBB3). - I cannot postpone shopping for goods when viewing live streaming (IBB4).	Likert	Sawarsa et al. (2023)

The population is the live-streaming users of e-commerce in Bandung. The samples are taken using purposive sampling with some criteria. Firstly, domicile in Bandung. Secondly, they have an e-commerce platform integrated with the live-streaming feature. Thirdly, they buy goods without consideration. Based on three criteria, this study sets the number of samples based on theory verification, i.e., at least 200 people, as Ghozali (2021b) requires, trailed by Mariana (2024).

Validity and reliability measure the accuracy and consistency of response (Sugiyono, 2019). Furthermore, to conduct them, the confirmatory factor analysis based on the variance-based structural equation model through SmartPLS software is utilized (Ghozali, 2021b). Moreover, this study uses confirmatory factor analysis to validate the response, where the loading factor becomes a benchmark. When items with a loading factor below 0.5, they must be eliminated to make all loading factors and average variance extracted (AVE) exceed 0.5 (Hair Jr. et al., 2019). Finally, Cronbach Alpha and composite reliability are used to test reliability. If both values exceed 0.7, the respondent's answer has met this reliability test (Ghozali, 2021a; Sholihin & Ratmono, 2020).

After achievable validity and reliability testing, the next phase estimates the path coefficient based on *bootstrapping* to produce the t-statistical probability. After that, the blindfolding must be performed to result in the predictive relevancy of this model (Ghozali, 2021b). By mentioning Figure 1, three sub-structures of the model exist in equations one, two, and three:

$CT = \gamma_1 SPLS + \xi_1$ (Equation 1)

$FE = \gamma_2 SPLS + \xi_2$ (Equation 2)

$IBB = \beta_1 CT + \beta_2 FS + \xi_3$ (Equation 3)

Notes: γ and β are the path coefficients for exogenous and endogenous variables, respectively, and ξ is the error for latent variables.

4. Results

Based on a survey conducted from June to October 2024, this study obtained 240 respondents who had watched a live stream in the past two years. Frequency and portion are based on gender, age, education, job, and the platform to watch live streaming, as shown in Table 2: Most respondents are women (30.83%) and from 15 to 25 years old (60.83%). Additionally, they have a high academic school degree (43.25%), job as senior high school and

undergraduate students (42.5%), and utilize the TikTok platform to watch live streaming. The least respondents are men (30.83%), above 45 (0.83%). Also, they have higher vocational degrees (16.25%), jobs as dentists (0.42%), and housewives (0.42%). Furthermore. 0.84 % of them are job seekers and fresh undergraduate students.

Table 2: Respondent Profile

Profile	Description	Frequency	Portion
Gender	Man	74	30.83%
	Woman	166	69.17%
Age	From 15 to 25	146	60.83%
	From 26 to 35	71	29.58%
	From 36 to 45	21	8.75%
	Above 45	2	0.83%
Education	Senior high school	90	37.50%
	Higher vocational school degree	39	16.25%
	Higher academic school degree	111	46.25%
Job	Dentist	1	0.42%
	Fresh graduate	1	0.42%
	Housewife	1	0.42%
	Job seeker	1	0.42%
	Private employees	12	5.00%
	Civil servant	55	22.92%
	Senior high school and undergraduate student	102	42.50%
	Businessperson	67	27.92%
Platform to watch li*ve-streaming*	Facebook	7	2.92%
	Instagram	41	17.08%
	Lazada	7	2.92%
	Shopee	72	30.00%
	TikTok	88	36.67%
	Tokopedia	24	10.00%
	YouTube	1	0.42%

Table 3 shows the results of convergent validity and reliability tests for the statement items used. The loading factors of SPLS1, SPLS2, SPLS3, CT1, CT2, CT3, CT4, FS1, FS2. FS3, FS4, FS5, FS6, IBB1, IBB2, IBB3, and IBB4 exceed 0.5, i.e., 0.861, 0.889, 0.889, 0.882, 0.858, 0.781, 0.854, 0.781, 0.544, 0.599. 0.800, 0.798, 0.813, 0.845, 0.859, 0.878, and 0.911. Thus, the respondent's answers are convergently valid. The AVE exceeding 0.5 for SPLS: 0.774, CT: 0.713, FS: 0.534, and IB: 0.763 confirms this circumstance. In the reliability testing context, composite reliability and Cronbach Alpha exceed 0.7: 0.911 and 0.854 for SPLS, 0.908 and 0.865 for CT, 0.871 and 0.820 for FS, and 0.928 and 0.896 for IBB. Therefore, the answer meets this reliability test.

Table 3: Validity and Reliability Testing Result

Variable	Item	Loading factor	AVE	Composite Reliability	Cronbach's Alpha
Social presence in live-streaming	SPLS1	0.861	0.774	0.911	0.854
	SPLS2	0.889			
	SPLS3	0.889			
Customer trust	CT1	0.882	0.713	0.908	0.865
	CT2	0.858			
	CT3	0.781			
	CT4	0.854			
Flow experience	FE1	0.781	0.534	0.871	0.820
	FE2	0.544			
	FE3	0.599			
	FE4	0.800			

	FE5	0.798			
	FE6	0.813			
Impulsive buying behavior	IBB1	0.845	0.763	0.928	0.896
	IBB2	0.859			
	IBB3	0.878			
	IBB4	0.911			

Table 4 presents the estimation results of the variance-based structural equation model with probability t-statistics of 0.000 to prove the first hypothesis at parts a and b and the second and third hypotheses. All research hypotheses are accepted because these values are lower than 5%. Apart from that, the existing models, i.e., CT=f(SPLS), FE = f(SPLS), and IBB = f(CT and FE), can predict because the Q-square exceeds 0 as Ghozali (2021b) explains: 0.522, 0.387, and 0.366. By corresponding the R-square for the CT and FE models of 0.739 and 0.735. It indicates that SPLS strongly contributes because it exceeds 0.67, as Ghozali (2021b) requires. Meanwhile, the R-square for the IBB model is 0.488 This circumstance means that CT and FS contribute moderately because their values are between 0.33 and 0.67, as explained by Ghozali (2021b).

Table 4: The Estimation of Variance-Based Structural Equation Model

Hipotesis	Causal Direction	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	Probability	Q-square	R-square
H_1a	SPLS → CT	0.860	0.018	46.998	0.000	0.522	0.739
H_1b	SPLS → FE	0.857	0.016	54.364	0.000	0.387	0.735
H_2	CT → IBB	0.310	0.085	3.654	0.000	0.366	0.488
H_3	FE → IBB	0.922	0.066	13.991	0.000		

5. Discussion

Part A of the first hypothesis is satisfactory. Therefore, a positive relationship between live-streaming social presence and customer trust is proven. Live-streaming success depends on a host being trusted by the audience joining the room. To be trusted, the host must guarantee that the promises are the same as the reality. By having a positive tendency, this evidence supports Rashid et al. (2022) investigating 334 people in Pakistan during the COVID-19 pandemic and Hoang and Dang (2024) after researching 291 respondents in Vietnam. Finally, this propensity aligns with Ratnawati and Hanoky (2023), Sawarsa et al. (2023), and Thesia and Aruan (2023), studying 258, 166, and 200 respondents in Indonesia, one-to-one.

Part B of the first hypothesis is adequate. Thus, a positive relationship between live-streaming social presence and flow experience is proven. Live-streaming success depends on the host being friendly and polite with the audience joining the room. By having a positive tendency, this evidence supports Dong et al. (2023) and Huo et al. (2023) after investigating 268 and 375 users in China, respectively. Besides, this inclination affirms Sawarsa et al. (2023) and Hoang and Dang (2024) utilizing 166 Indonesians and 291 Vietnamese as their samples one-to-one.

Hypothesis two is acceptable. Hence, there is a positive association between customer trust and impulsive buying. Trust is essential for online transactions. Without online trust, customers find it impossible to buy goods during live streaming. Therefore, a streamer must ensure that the offered goods are the same as those received in the customers' hands. With this positive proof, this study aligns with Darmawan and Gatheru (2021), Sawarsa et al. (2023), Salsabila and Dewi (2024), researching 100, 166, and 189 people in Indonesia, Hoang and Dang (2024) studying 291 people in Vietnam; Sun et al. (2023) and Tian et al. (2023), investigating 675 and 361 people in China.

Finally, hypothesis three is admitted. Henceforth, a positive association between flow experience and impulsive buying is accepted. Enjoying life-streaming is essential for viewers. Indeed, the viewers in this situation will buy

goods spontaneously because of the host's friendliness. With this propensity, this study affirms Wu et al. (2020), Cui et al. (2022), Huo et al. (2023), Husada et al. (2023), Sawarsa et al. (2023), and Hoang and Dang (2024), declaring that the better the flow experience, the more tendency the spontaneous purchase.

6. Conclusion

This study aims to investigate and analyze the effect of social presence in live streaming on consumer trust and flow experience and the influence of consumer trust and flow experience on impulsive buying. After examining 240 responses from life-streaming viewers joining the survey, this study demonstrates the positive causal relationships based on four hypotheses testing results. By mentioning this fact, this study recommends that the streamer communicate with its viewers during life-streaming; therefore, the viewers trust and enjoy interacting, leading to impulsively buying the offered goods.

Academically, this study has limitations, such as (1) the number of consequences of flow experience and customer trust and (2) the location. Therefore, by mentioning the first and second limitations, the succeeding scholars may use satisfaction and loyalty as the consequences of flow experience and customers besides impulsive purchases and enlarge the location scope, not only in Bandung but also the other most prominent cities in Indonesia like Jakarta, Surabaya, Medan, Bekasi, Semarang, Tangerang, Depok, Palembang, and Makassar.

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