

# The Impact of Live Streaming Performance on E-commerce Purchase Behavior in Indonesia

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**Abstract**— Indonesia's online shopping industry experienced significant growth, with e-commerce sales increasing by 150% between 2019 and 2022. This growth opened up opportunities for small traders (MSMEs) to promote their products or services through e-commerce. In 2023, Indonesia entered a new digital market with live-streaming, which became the most suitable feature for promoting products in e-commerce. However, sellers often lack knowledge about the factors influencing live-streaming performance and its effect on consumer purchase behavior, especially in Indonesia. This study investigates the dominant factors influencing live-streaming performance, including interactivity, visualization, entertainment, social presence, and psychological distance. The study aims to examine the extent to which these factors influence live-streaming performance, providing sellers with information to optimize their performance and to inform consumers' purchase decisions. The data collected from multiple respondents were processed using validity and reliability tests and Structural Equation Modeling (SEM). The results indicate a simultaneous influence between live-streaming performance, customer satisfaction, and psychological distance reduction on consumer purchase behavior in Indonesia.

**Keywords**— E-commerce, Live Streaming Performance, Customer Satisfaction, Social Presence, Psychological Distance, Purchase Behavior.

## I. INTRODUCTION

The online shopping industry in Indonesia has experienced significant expansion. Indonesian e-commerce grew by 150%, from USD 17.59 billion to USD 44.93 billion between 2019 and 2022 (Nurhayati, 2024). The growth of online shopping has provided opportunities for small merchants (MSMEs) to promote their goods or services through e-commerce, with small sellers dominating the market. This phenomenon has transformed the way people interact and share information in an unprecedented ways. Shopee Live is the most popular live-streaming shopping platform in Indonesia (Annur, 2022). A survey by JakPat showed that 83.7% of Indonesians have used the online shopping feature that enables live-streaming, also known as 'live shopping'. One of the sites offering the most live shopping experiences to customers in Indonesia is Shopee, with 83.4% of the total 2,712 respondents on June 5, 2022 (Nurhayati, 2023). Data from Katadata Media Network shows that Shopee was the e-commerce platform with the most visitors, reaching 2.35 billion in 2023, with the user base dominated by Generation Z and Millennials (Ahdiat, 2024).

Therefore, live streaming performance has become a vital part of e-commerce companies like Shopee in Indonesia's ever-

evolving online commerce era. Live streaming performance encompasses various aspects, such as live product demonstrations, direct interaction with customers, and attractive promotional offers. With a compound annual growth rate (CAGR) of 150%, Indonesia's e-commerce business is projected to grow to USD 82 billion by 2025 and could even reach USD 160 billion by 2030. Given the significant commercial value and the forecasted continuous growth in the coming years, in-depth research into live streaming commerce is essential for e-commerce companies to grow and sustain themselves in the Indonesian market. Live streaming performance has become a crucial component for e-commerce companies like Shopee in Indonesia's rapidly evolving online commerce era. Live streaming performance includes various aspects, such as live product demonstrations, direct interaction with customers, and attractive promotional offers. It enables companies like Shopee to present products more realistically to customers. Live streaming has shown an extraordinary ability to reach a wide range of users online, especially in overcoming the global pandemic, making it increasingly popular (Chen et al., 2020).

According to research by Paolo Crosta (2021), e-commerce businesses and systems can function in various ways, but some have become popular by continuously utilizing digital communication through online platforms, which enhances shopping during live streaming (Crosta et al., 2021). One of the most critical components of marketing, business, and management is consumer behavior, which is closely related to psychological and cultural factors that significantly influence each other. For e-commerce companies in Indonesia, focusing on customer satisfaction is not only a wise strategy but also a necessity to remain competitive in the ever-evolving market. Research on the psychological mechanisms of live streaming largely focuses on internal states such as social presence, psychological distance, and trust. Social presence reduces the psychological distance between buyers and sellers, thereby increasing trust in online shopping.

There may also be some correlations between these psychological conditions in the context of live streaming. The psychological mechanisms of these factors on purchase behavior may vary. To address this gap, we use the stimulus-organism-response (SOR) framework as our theoretical framework and explore how different elements (e-service quality, interactivity, visualization, and entertainment) affect live streaming performance. In turn, live streaming

performance influences customer satisfaction, social presence, and psychological distance, which collectively impact purchase behavior. Thus, the results of this study will demonstrate that these elements play a significant role in live streaming performance and the underlying psychological mechanisms.

## II. METHODOLOGY

### A. Research Design

This research examines the perspective of each individual e-commerce user regarding live-streaming shopping on e-commerce platforms without limiting the level of effort involved in live-streaming shopping. The defined fields of study include the impact of live-streaming e-commerce on customer satisfaction, social presence, and psychological distance reduction. This cross-sectional research collects data from many different individuals at a given time or period to answer the research questions (Zhang et al., 2020).

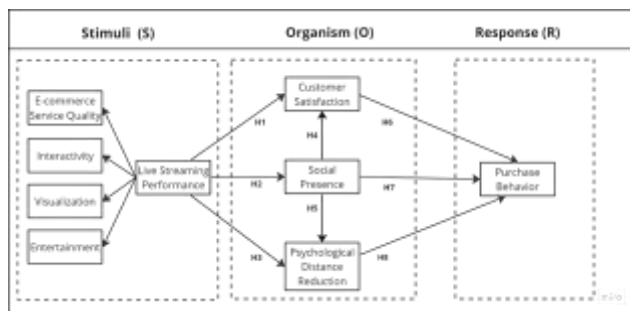


Fig. 1. Research Model

### B. Data Type and Source

The research is quantitative, measurable, and inseparable from variables and hypotheses. The variable is a concept with significant value, while the hypothesis is an assumption or proposition that indicates the relationship between variables that have not been tested (Yapy et al., 2023). The research data were collected through questionnaires distributed over the internet using Google Forms.

### C. Population and Technique

In this study, the unit of observation is an individual (17-55 years old), and the unit of analysis is the perspective of an individual who performs transactions on e-commerce platforms featuring live streaming. The study will use non-probability sampling, a random data collection method in which eligible and willing participants fill out online surveys. G Power software will be used to calculate the required sample size. According to the software, the minimum recommended sample size for this study is 74 respondents. The target number of samples to be collected was 200 respondents (Kang et al., 2021).

### D. Operational Variable

All variables pertinent to the study have been analyzed using indicators previously tested in prior studies. The following table provides a detailed description of all variables and relevant indicators in the context of this study.

Item Measurements		
Construct	Item	References
<b>E-Commerce Service Quality</b>	SQ1 Easy product return process at Shopee.	(Djami & Sembiring, 2023)
	SQ2 Online payment system in Shopee's secure e-commerce application.	
	SQ3 E-commerce application works fast, and no error occurs.	
	SQ4 The live streaming electronic service provider provides a service that meets my needs.	
<b>Interactivity</b>	N1 Host/Streamer is happy to communicate with me while live streaming is ongoing.	(Xue et al., 2020;Zaraswati & Setyawati, 2023)
	IN2 Host/ Streamer is actively answering my questions while the live-stream is on.	
	IN3 Host/Streamer answers my question about live streaming.	
	IN4 Host/Streamer provides relevant information to answer my questions while live streaming takes place.	
<b>Visualization</b>	VS1 I can watch a live-streamer giving information about how to use the product while live -streaming takes place.	(Dong & Wang,2018)
	VS2 Live streaming helps me see the product clearly.	
	VS3 Live streaming helped me visualize products as real.	
	VS4 Display good live-streaming video quality.	
<b>Entertainment</b>	ET1 Live-streaming attracted my interest in shopping.	(Chen & Lin, 2018;Pratama & Mayangsari, 2021)
	ET2 The live-streams made me enjoy the time while shopping.	
	ET3 Content on live-streaming entertains me.	
	ET4 Live-Streaming created a new atmosphere for me.	
<b>Customer Satisfaction</b>	CS1 The quality of the information provided when live-streaming is good.	(Alifia, 2022)
	CS2 I found it easy to navigate Shopee to find the product I wanted.	
	CS3 Product description shown on live streaming is accurate.	
	CS4 The quality of service provided during live-streaming is good.	
<b>Social Presence</b>	SP1 Interactivity with the streamer is personal.	(Alifia, 2022)
	SP2 Interactive with the Streamer feels warm.	
	SP3 Interactivity with the host/streamer makes me feel comfortable.	
	SP4 Interactivity with the host/streamer attracted me emotionally.	

<b>Psychological Distance Reduction</b>	<p>SP5 Interactivity with the streamer attracted me emotionally.</p> <p>PD1 Live-streaming reduces the distance between me and the host/streamer.</p> <p>PD2 Live-streaming brings my soul emotion closer to the streamer.</p> <p>PD3 Interactivity while live-streaming makes me feel closer to the host/streamer.</p> <p>PD4 Live streaming reduces communication barriers with the host/streamer.</p> <p>PB1 Recommendations from the live-stream hosts influenced my purchase decision.</p> <p>PB2 Product description on live streaming encouraged me to buy the offered product.</p> <p>PB3 Comments from other viewers during live streaming influenced me to buy the product.</p> <p>PB4 Live streaming influenced me to make impulsive purchases.</p>	(Chen & Li, 2018)
<b>Purchase Behaviour</b>		(García-Salirrosas et al., 2022; Liu et al., 2022)

In this study, a PLS-SEM (Partial Least Squares Structural Equation Modeling) data processing technique was utilized. This was conducted using SmartPLS 3.2.9, which is accessible and user-friendly. The measurement models for this study were evaluated using external loadings, construct reliability and discriminant validity. Known as a "regression-based" approach, PLS-SEM minimizes the residual variance of the endogenous constructs. In comparison to Covariance-based SEM (CB-SEM), PLS-SEM is recognized for its greater power, fewer identification problems, and effectiveness with both smaller and larger sample sizes. PLS-SEM is also capable of combining formative and reflective constructs (Hair et al., 2019b).

To measure the correlation value in SEM-PLS calculations, this research will use HTMT. The heterotrait-monotrait (HTMT) correlation value is the average value of both heterotrait-heteromethod correlations, which are cross-construct indicator correlations measuring different phenomena, and monotrait-heteromethod correlations, which are indicator correlations within the same construct.

### III. RESULT AND DISCUSSION

#### A. Social Demographic Characteristic

The majority of 110 respondents were aged 15-25 (54.9%), 32.3% of respondents were 26-35, 8.8% were 36-45, and 3.9% were over 45 years old. There were 103 female respondents (51.7%) and 97 male respondents (48.3%). In terms of education, 7 respondents (3.9%) were currently in senior high school, 33 respondents (16.7%) held a senior high school diploma, 37 respondents (18.6%) were currently pursuing a bachelor's degree, 72 respondents (35.8%) held a bachelor's degree, 24 respondents (11.8%) were currently pursuing a master's degree, 22 respondents (10.8%) held a master's degree, 2 respondents (1.0%) were currently pursuing a doctoral degree, 1 respondent (0.5%) held a doctoral degree, and 3 respondents (1.5%) had other educational backgrounds.

#### B. Outer Model Measurement

Live Streaming Performance on E-commerce Purchase Behavior has a loading factor value >0.7, suggesting that the deployed research tool was valid. The average Variance Extracted (AVE) of every latent construct in this research is > 0.5, as shown in Figure 2, demonstrating a successful convergent validity test for each construct used.

#### C. Inner Model Measurement

The inner model measurement was conducted to examine the influence between latent variables and to test the hypotheses. The influence between latent variables can be seen from the R-square value. The larger the R-square value, the greater the influence of exogenous latent variables on endogenous latent variables, as well as the significance of the structural path coefficient.

The results of the cross-loading test for each indicator on the constructs are greater than all of their cross-loadings. This indicates that the instruments used have met the Fornell-Larcker criteria standards, thus confirming that this research has also met discriminant validity.

#### E. Data Analysis Techniques

##### I. Validity and Reliability Test

Validity testing and reliability testing are conducted before further data processing. The purpose of these tests is to determine whether each instrument used in this research is appropriate for measuring the concepts in this study (Hair et al., 2021).

To determine whether the data obtained were valid, this research consider the results of convergent validity and discriminant validity. Convergent validity aims to determine whether the relationship between each indicator or instrument and what its construct or latent variable is. This can be observed from the factor loadings greater than 0.7 and the average variance extracted (AVE) greater than 0.5 for each question item in the questionnaire (Mardjuki et al., 2023).

Furthermore, discriminant validity aims to determine whether a variable has adequate discriminant validity by comparing the loading value on the target variable with the loading values on other variables, where the target variable's loading value should be higher (Sihombing & Sigalingging, 2020). Discriminant validity is evaluated through the observation of cross-loadings, where the AVE value of each latent construct must exceed the highest squared correlation between that construct and any other latent constructs (the Fornell-Larcker criterion), and indicator loadings must surpass all their cross-loadings.

Reliability testing also assessed the consistency of the answers received from the respondents. To evaluate the reliability and consistency of the obtained data, reliability assessment was performed using Cronbach's Alpha (CA) and Composite Reliability (CR). Data reliability criteria are met if the CA and CR values exceed 0.7 (Hair et al., 2019a).

##### II. Structural Equation Modeling (SEM)

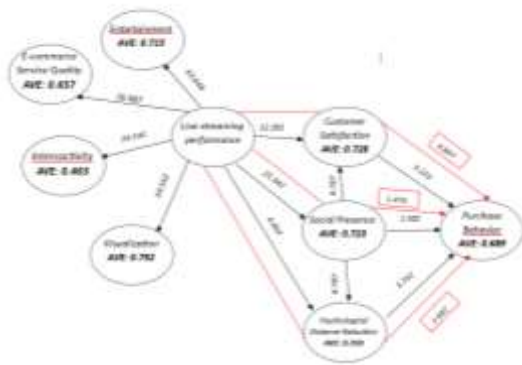


Fig. 2 Patch Coefficients and AVEs

Discriminant validity using the HTMT ratio must show that the ratio value between constructs is less than the upper threshold of 0.90. Based on the data processing performed, the HTMT values for each construct are below 0.90. Therefore, it can be concluded that the data obtained in this research meet the criteria for discriminant validity because it satisfies the predetermined criteria.

D. Hypothesis Testing

TABLE II. The Hypothesis Testing

Hipotesis	Path	Path Coefficient	t - Statistics	p- Value
H1	LSP -> CS	0.704	12.202	0.000
H2	LSP -> SP	0.767	25.342	0.000
H3	LSP -> PDR	0.316	4.464	0.000
H4	SP -> CS	0.190	2.801	0.005
H5	SP -> PDR	0.540	8.787	0.000
H6	SP -> PB	0.139	1.502	0.134
H7	CS -> PB	0.395	5.223	0.000
H8	PDR -> PB	0.344	3.752	0.000
H9	LSP -> CS-> PB	0.278	4.807	0.000
H10	LSP -> SP-> PB	0.106	1.474	0.141
H11	LSP -> PDR-> PB	0.109	2.682	0.008
Second Order Construct	LSP -> SQ	0.826	16.687	0.000
	LSP -> IN	0.913	39.530	0.000
	LSP -> VS	0.903	59.543	0.000
	LSP-> ET	0.895	63.648	0.000

Note: CS = Customer Satisfaction; SQ = E-commerce Service Quality; ET = Entertainment; IN = Interactivity; LSP = Live streaming performance, PDR = Psychological Distance Reduction; PB = Purchase Behavior; SP = Social Presence; VS = Visualization

This study uses a t-statistic value of at least 1.960. The path coefficient is considered significantly different from zero at a 5% significance level. Therefore, for the relationship to be considered significant at the 5% significance level, the p-value must be less than 0.050 (Yulianto et al., 2021). As shown in the table above, the path coefficient value for each construct is positive, indicating a positive relationship between the variables.

- H1: Live Streaming Performance has a positive impact on Customer Satisfaction
- H2: Live Streaming Performance has a positive impact on Social Presence
- H3: Live Streaming Performance has a positive impact on Psychological Distance Reduction
- H4: Social Presence has a positive impact on Customer Satisfaction

- H5: Social Presence has a positive impact on Psychological Distance Reduction
- H6: Social Presence has a positive impact on Purchase Behavior
- H7: Customer Satisfaction has a positive impact on Purchase Behavior
- H8: Psychological Distance Reduction has a positive impact on Purchase Behavior
- H9: Customer Satisfaction mediates the relationship between Live Streaming Performance and Purchase Behavior.
- H10: Social Presence mediates the relationship between Live Streaming Performance and Purchase Behavior.
- H11: Psychological Distance Reduction mediates the relationship between Live Streaming Performance and Purchase Behavior.

Based on the data obtained from the testing conducted in this study, it was found that there were hypotheses both rejected and accepted. Thus, the findings indicate a significant and positive influence of live streaming performance on customer satisfaction, live streaming performance on psychological distance reduction, social presence on customer satisfaction, and social presence on psychological distance reduction. The rejected hypothesis pertained to social presence and its impact on purchase behavior.

E. Discussion

1. The results of this study highlight the importance for online sellers to engage in live streaming performances, particularly to enhance interactivity, e-commerce service quality, visual appeal, and compelling content to achieve optimal sales. Maintaining high-quality live streaming performances can increase sales and customer loyalty.
2. Mediation effects were found where customer satisfaction mediates the relationship between live streaming performance and purchase behavior, and psychological distance reduction mediates the relationship between live streaming performance and purchase behavior. This implies that enhancing or creating satisfying shopping experiences for consumers or viewers indirectly influences their shopping behavior during live streaming. Likewise, effective interaction with consumers and viewers can reduce the perceived distance between them and the seller, even in online settings. In essence, live streaming performance has both direct and indirect effects on purchase behavior.
3. Therefore, sellers aiming to boost product sales and brand engagement among consumers and viewers should focus on enhancing shopping experiences and bridging the distance between themselves and their audience. Strategies include optimizing product presentation, offering products that meet consumer needs, and implementing optimal live streaming performances.
4. However, this study also rejected a hypothesis regarding the mediation effect of social presence on the relationship between live streaming performance and purchase behavior. This suggests that while enhancing social interaction between sellers and consumers or viewers during live streaming may not significantly affect consumer shopping behavior, other variables may exert a more dominant influence. In other words, this mediation effect indicates that live streaming performance

may not directly or indirectly influence purchase behavior. Therefore, sellers may consider alternative strategies such as sales promotions, discounts, enhancing shopping emotions, and the perceived shopping value of the products offered (Refasa et al., 2023).

#### IV. CONCLUSION

Live streaming performance is crucial for sellers conducting sales through live streaming on an e-commerce platform, as it plays a vital role in business activities themselves. Furthermore, with advancing technology influencing consumer behavior from traditional in-store shopping to online platforms, live streaming has emerged as a new avenue for sellers to showcase their products or services easily. Therefore, this study aims to understand how live streaming performance influences consumer purchase behavior in Indonesia. The research examines the impact of live streaming performance (e-commerce service quality, interactivity, visualization, and entertainment) on an e-commerce platform, the effective management of live streaming strategies, and their implementation to enhance sales. Additionally, the study investigates the mediating effects of customer satisfaction, social presence, and psychological distance reduction on the relationship between live streaming performance and purchase behavior.

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