



## Implementation of the Stimulus-Organism-Response (S-O-R) Model in Analysing Impulse Buying of Fashion Products on Shopee Live Streaming Shopping

Fatasya Aulia Suyono<sup>1\*</sup>, Ghea Sekar Palupi<sup>1</sup>

<sup>1</sup>*Information System Department, State University of Surabaya, Surabaya, Indonesia*  
[fatasyaaulia.20076@mhs.unesa.ac.id](mailto:fatasyaaulia.20076@mhs.unesa.ac.id), [gheapalupi@unesa.ac.id](mailto:gheapalupi@unesa.ac.id)

**Abstract.** E-commerce is now an important part of the lives of Indonesians, fuelled by the development of technology and smartphones. Recent studies have identified live streaming as a key trend in e-commerce, with particular reference to its use in increasing interaction between sellers and buyers. The most widely used platform for live streaming shopping is Shopee Live. This research focuses on fashion products, which show high purchase rates through Shopee Live. The change in consumer behaviour, from relying on product descriptions to direct interaction with sellers, raises questions about the factors that drive impulse purchases in this context. The present study has been designed to identify the factors that influence the impulse purchase of fashion products on Shopee Live. To this end, the Stimulus-Organism-Response framework has been adopted. Data was collected through a survey of respondents who had made fashion purchases on Shopee Live. The data were analysed using the PLS-SEM method with SmartPLS 3.0 software. The results showed that the variables of attractiveness, trustworthiness, and expertise have a positive and significant effect on perceived enjoyment, while product usefulness, purchase convenience, and product price have a positive influence on perceived usefulness. In addition, it was found that perceived usefulness and perceived enjoyment contribute significantly to the impulse buying of fashion products.

**Keywords:** E-commerce; Fashion; Impulse buying; Live streaming shopping; Shopee Live; Stimulus-Organism-Response

### 1. Introduction

The presence of e-commerce has become one of the important aspects of the daily life of the Indonesian people in providing convenience to fulfil various needs. With the increasing development of the internet and smartphones, the level of e-commerce usage in Indonesia is also growing rapidly ([Dwitya and Hartono, 2023](#)). According to data from iPrice, the number of e-commerce users in Indonesia in 2022 reached 138.2 million people, an increase of 10.4% from the previous year. Based on data from Statista Market Insights, the number of e-commerce users in Indonesia in 2022 reached 178.94 million people, an increase of 12.79% compared to the previous year. Additionally, the number of e-commerce users is expected to reach 196.47 million users in 2023.

Recent years have seen a significant rise in the use of live streaming within the domain of e-commerce, with the objective of fostering greater interaction between sellers and buyers ([Dirnaeni, Ardiansyah and Indira, 2021](#)). This feature allows sellers to present the products offered in an interactive way and provide direct responses to what consumers need. Based on research conducted by Populix with the title 'Understanding Live streaming shopping Ecosystem in Indonesia' in May 2023, it was revealed that 69% of respondents chose Shopee Live as a frequently used live streaming feature, outperforming other e-commerce. According to data from Shopee, live streaming has become one of the most in-demand features, with the total audience in 2022 reaching 1.3 billion people, of

which half are from Indonesia. By utilising Shopee Live, businesses can have direct interaction with consumers so as to encourage increased attractiveness to the products offered and have a positive impact on product sales ([Liu, 2022](#)).

The present research is focused on the analysis of fashion products, a field driven by several seminal reasons. The results of research conducted by Populix show that fashion products are the most purchased fashion and accessories products, reaching 85%. Data from Shopee shows that fashion products are the most purchased category during Shopee Live, reflecting the high interest of Indonesian consumers in fashion products ([Padmasari and Widyastuti, 2022](#)). The emergence of live streaming shopping has triggered changes in consumer behaviour. Previously, consumers tended to make purchases based on product descriptions or written reviews have shifted to the need for direct product reviews from sellers while live streaming. This phenomenon creates various questions about what factors can drive consumer decisions to make impulse purchases through live streaming shopping.

Based on the background and data presented, this study aims to analyze in depth the factors that encourage impulsive buying behavior of fashion products on Shopee Live by adopting the Stimulus-Organism-Response (S-O-R) framework. Specifically, this study examines the influence of attractiveness, trustworthiness, expertise, product usefulness, purchase convenience, and product price on perceived enjoyment and perceived usefulness, which subsequently affect the urge to buy impulsively. This study is expected to contribute to the development of knowledge related to impulse buying behaviour in live streaming shopping by applying the Stimulus-Organism-Response framework. In addition, the findings of this study are expected to provide practical insights for business actors and streamers in designing effective marketing strategies to increase consumer engagement and impulse buying behaviour. Furthermore, this study is also expected to support positive social and economic development by encouraging more responsible and strategic digital marketing practices.

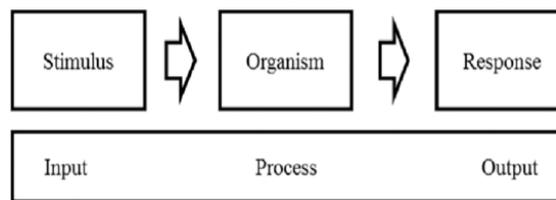
## 2. Literature Review

### 2.1. Live Streaming Shopping

Live streaming shopping is a form of electronic commerce where sellers or marketers use a live streaming platform to directly broadcast product or service presentations to an online audience ([Wongkitrungrueng, Dehouche and Assarut, 2020](#)). In this context, consumers can see real-time product demonstrations, listen to live explanations from sellers, and even interact with sellers or fellow consumers through commenting or live chat features. The research by [Xu, Wu and Li \(2020\)](#) explored the definition of the concept of live streaming shopping and identified factors that influence consumer behaviour in adopting live streaming platforms for shopping. They focused on aspects such as social interaction, live broadcast quality, and availability of product information presented through live streaming. Nevertheless, contemporary research has concentrated more extensively on the behavioural aspects of live streaming shopping users. To illustrate this standpoint, consider the research undertaken by [Zhang et al. \(2020\)](#) which evaluates the impact of the design of live-streaming websites upon user engagement and the utilisation of such platforms in the context of social commerce. They highlighted the important role of user engagement in mediating the effect of website design on live streaming usage.

### 2.2. Stimulus-Organism-Response (S-O-R) Model

In a psychological study [Mehrabian and Russell \(1974\)](#), first introduced the Stimulus-Organism-Response (S-O-R) Model. This model includes three main elements, namely the environment or stimuli (S) that affect consumer behaviour and response; Organism (O) as a form of emotional reaction, and actual response (R). The Stimulus-Organism-Response (S-O-R) model posits that external stimuli from the environment exert an influence on the cognitive and emotional faculties of individuals in stimulating actual responses (see **Figure 1**).



**Figure 1** S-O-R Model

The initial implementation of the S-O-R model in a retail environment was done by [Donovan and Rossiter \(1982\)](#). They stated that stimuli, in the form of signals from the environment, as well as responses from the Organism, in the form of either approach or avoidance, are determined by its emotional state and cognitive state.

In this study, the Stimulus-Organism-Response (S-O-R) model is adopted to analyse impulse buying behaviour in the context of Shopee Live streaming shopping. The adoption of this model refers to the framework developed by [Lee and Chen \(2021\)](#), which explains impulse buying behaviour in live streaming commerce. In this research, Stimulus is represented by attractiveness, trustworthiness, expertise, product usefulness, purchase convenience, and product price. Organism is represented by perceived enjoyment and perceived usefulness as consumers' emotional and cognitive responses. Meanwhile, Response is represented by urge to buy impulsively.

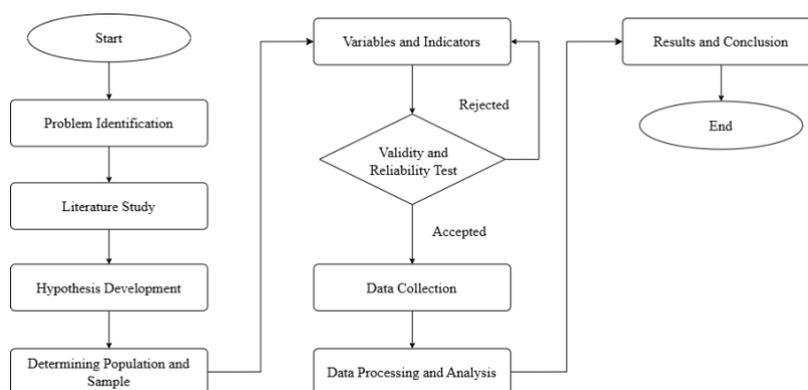
Although many studies have reported positive relationships between live streaming features and consumer purchase behaviour, several studies also indicate that the influence of stimulus factors may vary depending on research context. [Lee and Chen \(2021\)](#) explain that consumer responses in live streaming shopping are influenced by platform characteristics and individual differences. In addition, [Shang et al. \(2023\)](#) highlight that perceived trust and enjoyment do not always have uniform effects across different consumer groups. Sun et al. (2019) and [Xu et al. \(2022\)](#) also suggest that cultural background and usage patterns may affect how consumers respond to live streaming stimuli. Therefore, examining these relationships within the Indonesian Shopee Live context becomes important to provide more comprehensive empirical evidence.

The S-O-R model is selected because it is able to explain the relationship between environmental stimuli, internal psychological conditions, and behavioural responses in an integrated manner. Compared to models that only focus on technology acceptance or emotional aspects, the S-O-R framework provides a more comprehensive explanation of how external factors during live streaming sessions influence consumer impulse buying behaviour. Therefore, the conceptual model proposed in this study is an adaptation of previous research, which is adjusted to the context of Shopee Live and fashion products in Indonesia.

### **3. Methodology**

#### *3.1. Research Methodology*

This research uses the Stimulus-Organism-Response Model as a framework. The variables and indicators in this study adopt the [Lee and Chen \(2021\)](#) entitled "Impulse Buying Behaviors In Live streaming Commerce Based on The Stimulus-Organism-Response Framework". At the data collection stage, a questionnaire containing a series of questions to respondents online will be distributed via social media platforms in the form of Google Form (see **Figure 2**).



**Figure 2** Research Methodology

This study applies a quantitative research approach using a survey method to examine the relationships among variables in the proposed conceptual model. The research design is structured to analyse the influence of Stimulus variables on Organism variables and their impact on Response variables through Structural Equation Modeling using Partial Least Squares (PLS-SEM). This design is considered appropriate to achieve the research objectives and to analyse complex relationships among multiple constructs simultaneously.

### 3.1.1. Problem identification

The problem identification stage is carried out to formulate the focus of this research, namely the application of the Stimulus-Organism-Response (S-O-R) model in analysing the impulse purchase of fashion products on the most frequently used live streaming shopping platform based on several studies, namely Shopee Live. Shopee utilises the live streaming feature to attract customer attention through real-time interactions and special offers offered during live streaming.

### 3.1.2. Literature Study

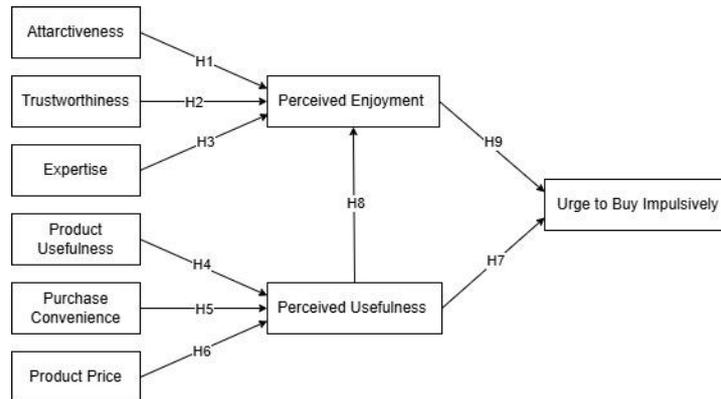
The literature study stage by collecting various references such as books, journals, and scientific articles related to the research problem and objectives. The literature search used keywords such as "Impulsive Buying", "Live streaming shopping", and "Stimulus-Organism-Response (S-O-R) Model" on sources such as Emerald Insight, ResearchGate, ScienceDirect, etc.

### 3.1.3. Hypothesis Development

This study utilises the Stimulus-Organism-Response (S-O-R) research model as a theoretical framework. Stimulus-Organism-Response (S-O-R) is a model that describes how a stimulus from the environment impacts an individual's cognitive and emotional understanding in stimulating an actual response. The S-O-R model developed by [Lee and Chen \(2021\)](#) entitled "Impulse Buying Behaviors In Live Streaming Commerce Based on The Stimulus-Organism-Response Framework" (see **Figure 3**).

In this study, the Stimulus-Organism-Response (S-O-R) framework is applied by classifying the research variables into three components. Stimulus represents external factors in live streaming shopping, which include attractiveness, trustworthiness, expertise, product usefulness, purchase convenience, and product price. These variables reflect the characteristics of streamers and platform features that influence consumers during live streaming sessions. Organism represents consumers' internal psychological responses, which are reflected by perceived enjoyment and perceived usefulness. These variables describe consumers' emotional and cognitive reactions to the received stimuli. Response represents consumers' behavioural reactions, which are reflected by the urge to buy impulsively. This variable indicates consumers' tendency to make spontaneous purchasing decisions during live streaming shopping activities. The formulation of hypotheses is conducted with the objective of gaining a more profound understanding of the factors that influence impulse buying

behaviour in the context of Shopee Live streaming shopping. The hypotheses proposed in this study are outlined below:



**Figure 3** Conceptual Model

The attractiveness of streamers both in terms of characteristics and streamer characteristics can affect the emotional state of the audience ([Lin and Nuangjamnong, 2022](#)), encouraging them to purchase the promoted product ([Ey, 2021](#)). Consequently, the following hypotheses are hereby proposed:

**Hypothesis 1 (H1).** Attractiveness has a positive effect on perceived enjoyment.

When the audience feels that the streamer is trustworthy, honest, and reliable, this can increase trust and a positive impression of the promoted product ([Lee and Chen, 2021](#)), which then affects the emotional state of the consumer ([Shang et al., 2023](#)). Consequently, the following hypotheses are hereby proposed:

**Hypothesis 2 (H2).** Trustworthiness has a positive effect on perceived enjoyment

Streamer expertise and knowledge about the product or service offered can reduce audience doubts so that it can affect consumers' satisfaction and trust in streamers when making purchasing decisions ([Zhang, Zhang and Wang, 2022](#); [Tang, Tan and Tham, 2022](#)). Consequently, the following hypotheses are hereby proposed:

**Hypothesis 3 (H3).** Expertise has a positive effect on perceived enjoyment

Products that are considered useful or useful by consumers will increase the level of perceived usefulness ([Rasool L Khan et al., 2021](#)), motivating consumers to participate in making purchases during the live streaming shopping process ([Gan and Wang, 2017](#)). Consequently, the following hypotheses are hereby proposed:

**Hypothesis 4 (H4).** Product usefulness has a positive effect on perceived usefulness

Convenience in the buying process can increase the perception of product usability by consumers ([Lee and Chen, 2021](#)), motivating them to perceive the process as useful and relevant ([Xu, Li and Su, 2022](#)). Consequently, the following hypotheses are hereby proposed:

**Hypothesis 5 (H5).** Purchase convenience has a positive effect on perceived usefulness

Product prices that are considered appropriate or affordable by consumers can motivate consumers to see the product as useful ([Zhang, Zhang and Wang, 2022](#)). Providing coupons and giving discounts to the audience is one way to attract purchases ([Gao et al., 2022](#)). Consequently, the following hypotheses are hereby proposed:

**Hypothesis 6 (H6).** Product price has a positive effect on perceived usefulness

Consumer perceptions of product usefulness are believed to have a direct impact on the impulse to make impulse purchases ([Lee and Chen, 2021](#)). The greater the level of usefulness perceived by

consumers of live streaming services, the greater the urge or desire to make impulse purchases ([Hua and Chiu, 2022](#)). Consequently, the following hypotheses are hereby proposed:

**Hypothesis 7 (H7).** Perceived usefulness has a positive effect on urge to buy impulsively

It can be posited that consumers who perceive the product to be useful and relevant to their requirements are likely to experience heightened levels of enjoyment during the buying process ([Lee and Chen, 2021](#); [Shang et al., 2023](#)). Consequently, the following hypotheses are hereby proposed:

**Hypothesis 8 (H8).** Perceived usefulness has a positive effect on perceived enjoyment

Pleasant and satisfying experiences arising from various factors that are watched or obtained during live streaming shopping can strengthen consumer impulses to make impulse purchases ([Dwitya and Hartono, 2023](#); [Lin et al., 2023](#)). Consequently, the following hypotheses are hereby proposed:

**Hypothesis 9 (H9).** Perceived enjoyment has a positive effect on the urge to buy impulsively

#### 3.1.4. Determining Population and Sample

This study utilises the 10-times rule methodology to determine the requisite sample size. This methodology stipulates that the sample size should be no less than 100 ([Sugiyono, 2013](#)). The magnitude of the sample is subject to modification according to the number of indicators that are present in the questionnaire. It is imperative to note that the magnitude of the sample must fall within the range of five to ten times the number of indicators ([Hair et al., 2014](#)). In this study using 39 indicators, therefore the sample size required is: Number of indicators (39) x 5 = 195 respondents.

In addition to determining the sample size using the 10-times rule, this study employs a non-probability sampling technique with a purposive sampling approach. Respondents are selected based on specific criteria, namely consumers who have experience watching and purchasing fashion products through Shopee Live. This technique is applied because the exact number of Shopee Live users who meet these criteria is unknown. Therefore, purposive sampling is considered appropriate to ensure that respondents are relevant to the research objectives.

#### 3.1.5. Variables and Indicators

The variables and indicators employed in this research are drawn from the research of Lee and Chen (2021) which is entitled "Impulse Buying Behaviors In Live Streaming Commerce Based On The Stimulus-Organism-Response Framework".

#### 3.1.6. Validity and Reliability Test

The validity test in this study was carried out to determine whether the questionnaire that had been made was valid for use. Testing the validity of the instrument was carried out on 20 respondents who met the specified criteria. In the validity test,  $r_{count} > r_{table}$  so that it can be declared valid ([Sugiyono, 2013](#)). Meanwhile, the reliability test in this study was carried out with the aim of knowing the accuracy and accuracy of variable measurements, namely by looking at the Cronbach's Alpha value. The variables in the research instrument can be declared valid if the Cronbach's Alpha value is  $> 0.7$ .

#### 3.1.7. Data Collection

Data collection in this study uses primary data. The data collection technique used is distributing online questionnaires made from Google Form. According to [Sugiyono \(2013\)](#), a questionnaire is a method of collecting data by submitting a series of written questions to respondents to get answers. At the data collection stage, questionnaires will be distributed to respondents online through social media platforms. The questionnaire was distributed online through social media platforms such as WhatsApp, Telegram, and X to reach respondents who met the predetermined criteria.

#### 3.1.8. Data Processing and Analysis

Data analysis is the process of processing data into useful information to get conclusions and solve problems. At this stage, the data obtained was analysed using the SmartPLS and SPSS software

programs. In this study, IBM SPSS Statistics and SmartPLS 3 software were utilised to support data analysis. SPSS was used to conduct preliminary validity and reliability testing, while SmartPLS 3 was employed to evaluate the measurement model and structural model, including convergent validity, discriminant validity, composite reliability, coefficient of determination, effect size, and hypothesis testing through the bootstrapping method. Data processing in this study consists of several stages, including:

1. Measurement Model (Outer Model)

The measurement model testing technique is frequently referred to as the outer model. It serves the purpose of demonstrating the relationship between latent variables and their indicators, in addition to determining the validity and reliability of the collected data (Hair *et al.*, 2017). In the present analysis, a series of tests will be conducted, namely convergent validity with a loading factor value limit of > 0.70, discriminant validity with a cross loading value limit of > 0.70, Composite Reliability with a value limit of > 0.70, and Average Variance Extracted (AVE) with a value limit of > 0.50.

2. Structural Model Test (Inner Model)

The purpose of the structural model or inner model test is to illustrate the correlation between latent variables or constructs. This test involves the execution of multiple analyses, namely the Coefficient of determination ( $R^2$ ) with criteria of 0.67 (strong), 0.33 (moderate) and 0.19 (weak), and Effect size ( $f^2$ ) with criteria for values of 0.02 (small), 0.15 (medium), and 0.35 (large) (Hair *et al.*, 2017).

3. Hypothesis Test

In the context of hypothesis testing, the Bootstrapping method is employed to assess the effect of variables using SmartPLS (Hair *et al.*, 2017). Hypothesis testing is done by analysing the T-Statistics and P-values at a significance of 5% or 0.05. If the hypothesis is two-way (two tailed), the statistical value must be above 1.96, while for a one-way hypothesis (one tailed), the value must be above 1.645.

3.1.9. Results and Conclusion

At this stage, there will be an interpretation of the results obtained after analysing the data and drawing conclusions from this research relating to whether several factors that have been studied have a significant positive impact in encouraging impulse purchases of fashion products on Shopee Live. In addition, at this stage there will be suggestions given based on the process and results that have been obtained.

4. Results and Discussion

3.1. Demographic Characteristics of Respondents

This study obtained data from 297 respondents. Then data preprocessing was carried out, so that the data submitted in this study were 275 respondents. The data will be processed using SmartPLS 3. The following section details the findings of the analysis of the demographic characteristics of respondents (see Table 1).

Table 1 Demographic Characteristics of Respondents

Characteristics	Items	Frequency	Percentage (%)
Gender	Male	31	11
	Female	244	89
Age	18-24	189	69
	25-34	79	29

Characteristics	Items	Frequency	Percentage (%)
Domicile	35-44	7	2
	West Java	72	26
	East Java	55	20
	Central Java	44	16
	DKI Jakarta	38	14
	Banten	25	9
	DI Yogyakarta	15	5
	Others	26	9
Occupation	Student	130	47
	Private Employee	60	22
	Housewives	37	13
	Entrepreneurs	28	10
	Civil Servants	1	0,4
	Others	19	7
Frequency of watching Shopee Live in the last 3 months	< 3 times	28	11
	4 – 10 times	81	29
	> 10 times	166	60
Main reasons for watching Shopee Live	Discounts offered during the live broadcast	267	-
	The ease of shopping using Shopee Live	77	-
	Information provided by the streamer	93	-
	Promoted products attracted attention	79	-
	Unique promotional methods or sales strategies	38	-
	Streamer has an attractive appearance and character	11	-
	Streamer is a known figure such as a celebrity or influencer.	5	-

### 3.2. Validity and Reliability Test

#### 1. Validity Test

The validity test is carried out with the aim of ensuring that a measuring instrument can identify what it actually wants to measure. The validity test in this study uses the R table with a significance level of 5% with a value of 0.444. The results of the validity test, which was conducted utilising IBM SPSS software, are outlined herein (see **Table 2**).

**Table 2** Validity Test Results

Indicator	R Table	R Count	Result
ATT1	0,444	0,539	VALID
ATT2	0,444	0,567	VALID
ATT3	0,444	0,707	VALID
ATT4	0,444	0,574	VALID
ATT5	0,444	0,838	VALID
TRU1	0,444	0,735	VALID
TRU2	0,444	0,782	VALID
TRU3	0,444	0,782	VALID
TRU4	0,444	0,675	VALID
EXP1	0,444	0,695	VALID
EXP2	0,444	0,738	VALID
EXP3	0,444	0,740	VALID
EXP4	0,444	0,728	VALID
PU1	0,444	0,874	VALID
PU2	0,444	0,826	VALID

Indicator	R Table	R Count	Result
PU3	0,444	0,821	VALID
PC1	0,444	0,656	VALID
PC2	0,444	0,767	VALID
PC3	0,444	0,617	VALID
PC4	0,444	0,626	VALID
PC5	0,444	0,762	VALID
PP1	0,444	0,836	VALID
PP2	0,444	0,779	VALID
PP3	0,444	0,891	VALID
PerE1	0,444	0,627	VALID
PerE2	0,444	0,551	VALID
PerE3	0,444	0,712	VALID
PerE4	0,444	0,553	VALID
PerE5	0,444	0,668	VALID
PerU1	0,444	0,841	VALID
PerU2	0,444	0,834	VALID
PerU3	0,444	0,841	VALID
PerU4	0,444	0,739	VALID
PerU5	0,444	0,788	VALID
UBI1	0,444	0,715	VALID
UBI2	0,444	0,608	VALID
UBI3	0,444	0,755	VALID
UBI4	0,444	0,720	VALID
UBI5	0,444	0,788	VALID

## 2. Reliability Test

Reliability testing is a process that aims to ascertain the accuracy and consistency of a measured variable. This is achieved by examining the value of Cronbach's alpha, a statistical measure of reliability. The results pertaining to the reliability test are presented below, with the analysis being conducted through the utilisation of the SPSS software programme (see **Table 3**).

**Table 3** Reliability Test Results

Reliability Statistics	
Cronbach's Alpha	N of Items
.925	39

## 3.3. Data Analysis

### 1. Outer Model

#### a. Convergent Validity

The objective of this investigation lies in ascertaining the existence of a relationship between indicators on the one hand, and the construct or latent variable under scrutiny on the other hand, insofar as this relationship is indicative of a possible correlation. The outer

loading value is also referred to as indicator reliability, the outer loading value is acceptable if the result is above 0.70. This conclusion has been derived from the results of data processing using SmartPLS 3 with two iterations or repetitions of testing, it shows that there are 3 indicators that are invalid because they have a value  $< 0.70$ , namely PC1, PC2, PerE3, so that indicators must be satisfied and in the second iteration all indicators show a value  $> 0.70$ .

b. Discriminant Validity

In this test, the cross loadings value of each construct is estimated to ensure that the correlation of the construct with the measured item is higher than other constructs. The expected cross loadings value is  $> 0.7$ . The following are the results of the cross loading (see **Table 4**)

c. Composite Reliability (CR) and Average Variance Extracted (AVE)

Composite Reliability (CR) testing is carried out to measure how consistent the indicators used are. The Composite Reliability value must be  $> 0.70$ . Average Variance Extracted (AVE) testing is carried out to assess how well the variance of the indicators used in the construct can explain the variance of the construct. The AVE value must be  $> 0.50$  in order to be considered consistent. The following are the results of the Composite Reliability and Average Variance Extracted (see **Table 5**).

Table 4 Cross Loading

	ATT	TRU	EXP	PU	PC	PP	PerE	PerU	UBI
ATT1	0,760	0,448	0,375	0,309	0,316	0,217	0,428	0,324	0,275
ATT2	0,803	0,451	0,458	0,349	0,320	0,183	0,375	0,332	0,252
ATT3	0,784	0,419	0,406	0,263	0,267	0,126	0,364	0,286	0,233
ATT4	0,724	0,541	0,479	0,381	0,406	0,356	0,381	0,372	0,250
ATT5	0,742	0,542	0,465	0,369	0,357	0,289	0,377	0,358	0,255
TRU1	0,543	0,701	0,525	0,325	0,371	0,308	0,417	0,416	0,274
TRU2	0,409	0,805	0,453	0,277	0,316	0,386	0,372	0,384	0,198
TRU3	0,541	0,882	0,491	0,409	0,394	0,406	0,506	0,415	0,256
TRU4	0,526	0,832	0,493	0,370	0,348	0,273	0,485	0,358	0,224
EXP1	0,470	0,519	0,791	0,388	0,369	0,369	0,451	0,346	0,149
EXP2	0,424	0,491	0,834	0,337	0,441	0,441	0,459	0,443	0,247
EXP3	0,491	0,516	0,835	0,363	0,422	0,390	0,496	0,452	0,271
EXP4	0,465	0,442	0,781	0,433	0,406	0,390	0,479	0,457	0,215
PU1	0,336	0,369	0,407	0,825	0,369	0,373	0,440	0,359	0,235
PU2	0,390	0,375	0,440	0,883	0,414	0,351	0,490	0,403	0,240
PU3	0,386	0,362	0,357	0,841	0,433	0,447	0,448	0,452	0,271

	ATT	TRU	EXP	PU	PC	PP	PerE	PerU	UBI
PC3	0,441	0,376	0,457	0,406	0,766	0,472	0,478	0,487	0,207
PC4	0,269	0,298	0,300	0,349	0,748	0,339	0,327	0,460	0,399
PC5	0,296	0,351	0,408	0,352	0,797	0,449	0,420	0,472	0,210
PP1	0,220	0,339	0,405	0,431	0,522	0,818	0,417	0,499	0,282
PP2	0,272	0,323	0,387	0,306	0,420	0,805	0,444	0,414	0,241
PP3	0,281	0,393	0,429	0,405	0,413	0,870	0,525	0,461	0,322
PerE1	0,370	0,427	0,400	0,413	0,410	0,459	0,806	0,559	0,395
PerE2	0,400	0,461	0,532	0,552	0,504	0,574	0,854	0,603	0,393
PerE4	0,441	0,471	0,477	0,368	0,398	0,384	0,824	0,490	0,416
PerE5	0,483	0,505	0,536	0,469	0,461	0,431	0,860	0,562	0,345
PerU1	0,300	0,322	0,377	0,305	0,489	0,336	0,469	0,736	0,334
PerU2	0,372	0,403	0,519	0,439	0,538	0,458	0,521	0,794	0,319
PerU3	0,384	0,420	0,460	0,421	0,469	0,499	0,568	0,840	0,429
PerU4	0,291	0,347	0,313	0,349	0,457	0,475	0,481	0,799	0,358
PerU5	0,386	0,425	0,408	0,382	0,491	0,422	0,585	0,800	0,355
UBI1	0,325	0,277	0,254	0,268	0,369	0,377	0,378	0,418	0,872
UBI2	0,323	0,286	0,250	0,310	0,373	0,335	0,463	0,441	0,899
UBI3	0,248	0,241	0,218	0,197	0,236	0,271	0,371	0,368	0,873
UBI4	0,299	0,268	0,272	0,263	0,302	0,257	0,423	0,425	0,919
UBI5	0,263	0,222	0,205	0,248	0,247	0,253	0,392	0,331	0,836

**Table 5** CR and AVE

	CR	AVE
<i>Attractiveness</i>	0.874	0,582
<i>Trustworthiness</i>	0.882	0,652
<i>Expertise</i>	0.884	0,657
<i>Product usefulness</i>	0.886	0,722
<i>Purchase convenience</i>	0.814	0,594
<i>Product price</i>	0.870	0,692
<i>Perceived enjoyment</i>	0.903	0,699
<i>Perceived usefulness</i>	0.895	0,631
<i>Urge to buy impulsively</i>	0.945	0,775

## 2. Inner Model

### a. Coefficient of Determination ( $R^2$ )

The coefficient of determination, otherwise referred to as the R-squared value, constitutes a statistical test which is utilised for the purpose of evaluating the degree to which the independent variable (X) exerts influence upon the dependent variable (Y). The R-square value has three influence criteria, namely 0.67-1 is strong, 0.33-0.66 is moderate, 0.19-0.32 is weak ([Chin, 1998](#)). Here are the results of the R-square (see **Table 6**).

**Table 6 R-Square**

	R-Square	R-Square Adjusted	Criteria
<i>Perceived enjoyment</i>	0,546	0,539	Moderate
<i>Perceived usefulness</i>	0,466	0,460	Moderate
<i>Urge to buy impulsively</i>	0,252	0,247	Weak

The R-square value of Urge to Buy Impulsively is categorised as weak. This indicates that although the proposed model is able to explain impulse buying behaviour, there are other factors outside the model that may influence consumer impulse buying behaviour in live streaming shopping. These factors may include situational conditions, temporary emotional states, or promotional strategies that are not examined in this study.

b. Effect Size ( $f^2$ )

The term "Effect Size", otherwise referred to by the more specific term "f-square", denotes an experimental test designed to ascertain the extent to which the independent variable (X) contributes to the dependent variable (Y). The effect size value has three criteria, namely, 0.02 is small, 0.15 is medium, and 0.35 is large. The ensuing effect size is hereby presented (see **Table 7**).

**Table 7 Effect Size**

	Effect Size	Criteria
<i>Attractiveness -&gt; Perceived enjoyment</i>	0,012	Small
<i>Expertise -&gt; Perceived enjoyment</i>	0,045	Small
<i>Perceived enjoyment -&gt; Urge to buy impulsively</i>	0,063	Small
<i>Perceived usefulness -&gt; Perceived enjoyment</i>	0,282	Medium
<i>Perceived usefulness -&gt; Urge to buy impulsively</i>	0,052	Small
<i>Product price -&gt; Perceived usefulness</i>	0,083	Small
<i>Product usefulness -&gt; Perceived usefulness</i>	0,040	Small
<i>Purchase convenience -&gt; Perceived usefulness</i>	0,180	Medium
<i>Trustworthiness -&gt; Perceived enjoyment</i>	0,029	Small

### 3. Hypothesis Test

The objective of hypothesis testing is to ascertain the effect of variables that have been hypothesised in the present study. In this research, the hypothesis testing procedure was executed through the utilisation of the bootstrapping method, with a minimum sample size of 5,000 sub-samples being employed, as outlined in the 'Rules of Thumb for Bootstrapping in PLS-SEM Recommendations'. The criteria used to determine the hypothesis is accepted based on the T-statistic value > T-table (1.645) or the P-value < 0.05. In the event of the T-statistic value being greater than the critical value (1.645) or the P-value being greater than 0.05, the hypothesis will be rejected. The results of the hypothesis test are presented below (see **Table 8**).

**Table 8** Hypothesis Test Results

Relationship	Original Sample (O)	T-statistics ( O/STDEV )	P-Values	Result
Attractiveness -> Perceived enjoyment	0,100	1,665	0,048	Significant
Trustworthiness -> Perceived enjoyment	0,163	2,556	0,005	Significant
Expertise -> Perceived enjoyment	0,197	3,004	0,001	Significant
Product usefulness -> Perceived usefulness	0,172	2,737	0,003	Significant
Purchase convenience -> Perceived usefulness	0,389	6,711	0,000	Significant
Product price -> Perceived usefulness	0,261	4,208	0,000	Significant
Perceived usefulness -> Urge to buy impulsively	0,261	3,687	0,000	Significant
Perceived usefulness -> Perceived enjoyment	0,436	8,035	0,000	Significant
Perceived enjoyment -> Urge to buy impulsively	0,289	3,958	0,000	Significant

From the results of hypothesis testing, it can be seen that:

1. **Hypothesis 1 (H1)** : Attractiveness has a positive effect on Perceived enjoyment

The findings of the aforementioned hypothesis test have indicated that the relationship between attractiveness and perceived enjoyment possesses a path coefficient value of 0.100. Furthermore, the T-statistic value that has been ascertained, at 1.665, exceeds the established threshold, which is 1.645. Moreover, the P-value, which is 0.045, has been determined to be less than 0.05, thus meeting the stipulated significance criteria. Thus, this relationship can be declared statistically significant. Therefore, hypothesis H1 of this study is accepted. When viewers perceive that the streamer has an attractive appearance, they will feel entertained while watching the live stream (Ey, 2021). Thus, the streamer's visual appeal and prominent personality can be used as a strategy to attract viewers to watch the live stream.

2. **Hypothesis 2 (H2)** : Trustworthiness has a positive effect on perceived enjoyment

The findings of the aforementioned hypothesis test have indicated that the relationship between trustworthiness and perceived enjoyment possesses a path coefficient value of 0.162. Furthermore, the T-statistic value that has been ascertained, at 2.538, exceeds the established threshold, which is 1.645. Moreover, the P-value, which is 0.006, has been determined to be less than 0.05, thus meeting the stipulated significance criteria. Thus, this relationship can be stated as positive and significant. Therefore, hypothesis H2 in this study is accepted. Trust is an important factor, because if the audience does not trust the streamer, they are likely to switch to other live streaming shopping hosted by streamers they can trust more (Shang et al., 2023). It is evident that consumer confidence in the reliability and authenticity of the streamer is directly associated with a heightened level of trust in the promoted product.

3. **Hypothesis 3 (H3)** : Expertise has a positive effect on perceived enjoyment

The findings of the aforementioned hypothesis test have indicated that the relationship between expertise and perceived enjoyment possesses a path coefficient value of 0.198. Furthermore, the T-statistic value that has been ascertained, at 3.007, exceeds the established threshold, which is 1.645. Moreover, the P-value, which is 0.001, has been determined to be less than 0.05, thus meeting the stipulated significance criteria. Thus, this relationship can be stated as positive and significant. Therefore, hypothesis H3 in this study is accepted. When there is interaction between the audience and the streamer, where the

streamer shows his expertise by answering various questions from the audience about the products offered will create audience satisfaction when watching and participating in interactions with the streamer ([Tang, Tan and Tham, 2022](#)). The expertise of a streamer in providing accurate and in-depth product information can increase the level of pleasure felt by Indonesian consumers when watching live streaming shopping.

4. **Hypothesis 4 (H4)** : Product usefulness has a positive effect on perceived usefulness  
The findings of the aforementioned hypothesis test have indicated that the relationship between product usefulness and perceived usefulness possesses a path coefficient value of 0.284. Furthermore, the T-statistic value that has been ascertained, at 4.113, exceeds the established threshold, which is 1.645. Moreover, the P-value, which is 0.000, has been determined to be less than 0.05, thus meeting the stipulated significance criteria. Thus, this relationship can be stated as positive and significant. Therefore, hypothesis H4 in this study is accepted. When consumers easily find products that match their needs and preferences ([Gan and Wang, 2017](#)), It is hypothesized that this will increase their satisfaction with the live streaming shopping platform and ultimately encourage them to make unplanned purchases on the live streaming shopping platform.
5. **Hypothesis 5 (H5)** : Purchase convenience has a positive effect on perceived usefulness  
The findings of the aforementioned hypothesis test have indicated that the relationship between purchase convenience and perceived usefulness possesses a path coefficient value of 0.389. Furthermore, the T-statistic value that has been ascertained, at 6.672, exceeds the established threshold, which is 1.645. Moreover, the P-value, which is 0.000, has been determined to be less than 0.05, thus meeting the stipulated significance criteria. Thus, this relationship can be stated as positive and significant. Therefore, hypothesis H5 in this study is accepted. Consumers will respond positively when the content and functionality of live stream shopping are considered efficient and make it easier for consumers to fulfil their need ([Gao et al., 2022](#)). The explanation of the buying process delivered during the live streaming session further strengthens consumer confidence in the benefits of easy shopping.
6. **Hypothesis 6 (H6)** : Product price has a positive effect on perceived usefulness  
The findings of the aforementioned hypothesis test have indicated that the relationship between product price and perceived usefulness possesses a path coefficient value of 0.261. Furthermore, the T-statistic value that has been ascertained, at 4.102, exceeds the established threshold, which is 1.645. Moreover, the P-value, which is 0.000, has been determined to be less than 0.05, thus meeting the stipulated significance criteria. Thus, this relationship can be stated as positive and significant. Therefore, hypothesis H6 in this study is accepted. Products with favourable prices during live streaming sessions, will make consumers feel satisfaction with the shopping experience ([Xu, Li and Su, 2022](#)), which in turn can encourage them to make purchases.
7. **Hypothesis 7 (H7)** : Perceived usefulness has a positive effect on urge to buy impulsively  
The findings of the aforementioned hypothesis test have indicated that the relationship between perceived usefulness and urge to buy impulsively shows significant results with a path coefficient value of 0.412. Furthermore, the T-statistic value that has been ascertained, at 3.857, exceeds the established threshold, which is 1.645. Moreover, the P-value, which is 0.000, has been determined to be less than 0.05, thus meeting the stipulated significance

criteria. Thus, this relationship can be stated as positive and significant. Therefore, hypothesis H7 in this study is accepted. When consumers feel that a product presented in live streaming shopping has high benefits and is relevant to their needs ([Zhang, Zhang and Wang, 2022](#)), the urge to make unplanned purchases becomes stronger.

8. **Hypothesis 8 (H8)** : Perceived usefulness has a positive effect on perceived enjoyment  
The findings of the aforementioned hypothesis test have indicated that the relationship between perceived usefulness and perceived enjoyment possesses a path coefficient value of 0.472. Furthermore, the T-statistic value that has been ascertained, at 5.321, exceeds the established threshold, which is 1.645. Moreover, the P-value, which is 0.000, has been determined to be less than 0.05, thus meeting the stipulated significance criteria. Thus, this relationship can be stated as positive and significant. Therefore, hypothesis H8 in this study is accepted. When consumers feel that the products offered are relevant and beneficial to their needs, it contributes to increased satisfaction and pleasure during shopping ([Shang et al., 2023](#)). The greater the perceived usefulness of the product in the live streaming session, the higher the level of enjoyment they feel during the buying process, which in turn can trigger impulse purchase decisions.
9. **Hypothesis 9 (H9)** : Perceived enjoyment has a positive effect on urge to buy impulsively  
The findings of the aforementioned hypothesis test have indicated that the relationship between perceived enjoyment and urge to buy impulsively possesses a path coefficient value of 0.456. Furthermore, the T-statistic value that has been ascertained, at 5.678, exceeds the established threshold, which is 1.645. Moreover, the P-value, which is 0.000, has been determined to be less than 0.05, thus meeting the stipulated significance criteria. Thus, this relationship can be stated as positive and significant. Therefore, hypothesis H9 in this study is accepted. When consumers feel satisfied and enjoy their shopping experience, whether due to attractive product designs, adequate explanations from streamers, or special promos ([Lin et al., 2023](#)), they are likely to feel compelled to purchase the product spontaneously even if the consumer did not initially have the intention to make the purchase.

## 4. Conclusions and Suggestions

### 4.1. Conclusions

The conclusions that may be deduced from the preceding chapter's discourse are that the nine hypotheses proposed and tested within this study are to be accepted. The accepted hypotheses are Attractiveness, Trustworthiness, Expertise have a positive effect on Perceived Enjoyment, Product Usefulness, Purchase Convenience, Product Price have a positive effect on Perceived Usefulness, Perceived Usefulness has a positive effect on Perceived Enjoyment, and Perceived Enjoyment, Perceived usefulness has a positive effect on Urge to Buy Impulsively. This study also confirms the significance of the Stimulus-Organism-Response (S-O-R) model of live streaming shopping for fashion products in Indonesia on the Shopee Live platform.

### 4.2 Limitations

This study has several limitations. First, the sample was dominated by respondents aged 18–24 years, which may limit the generalisability of the findings to other age groups. Second, the study focuses only on fashion products and the Shopee Live platform, therefore the results may not fully

represent impulse buying behaviour in other product categories or live streaming platforms. Third, the R-square value for urge to buy impulsively was categorised as weak, indicating that other potential variables such as promotional intensity, social presence, or situational factors may also influence impulse buying behaviour but were not examined in this study. Future research is encouraged to include additional variables and broader demographic coverage to enhance the explanatory power of the model.

### 4.3 Suggestions

The results and discussions that have been carried out have resulted in several suggestions from researchers to future researchers who want to use similar topics:

1. Users of each platform have different behaviours from one platform to another so it is necessary to conduct research on objects that are different from this study to find out the differences in results.
2. The sample used by researchers is still limited. Further research needs to be carried out on samples with different and diverse age ranges so that further research is more representative and it can be seen whether there are differences in results with this study
3. It is recommended that future researchers incorporate or include additional variables that were not explored in this study.

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