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Original Article

Model of Impulsive Buying Behavior in Shopee Live: Study of Demand, Convenience, Interactivity, and Playfulness Through Perceived Usefulness

Amalia Nursyamsiah[1*], Mahir Pradana[2], Arry Widodo[3]

[1-3]School of Economic and Business, Telkom University, Indonesia
Email: [1)] amalianursyamsiah@student.telkomuniversity.ac.id,
[2)] mahirpradana@telkomuniversity.ac.id, [3)] arrywie@telkomuniversity.ac.id

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Abstract

Indonesia has seen significant growth in the e-commerce sector, characterized by rapid growth rates. E-commerce gives businesses a new feature with the aim of stimulating consumers to buy products. The live shopping feature on e-commerce platforms is now seen as the latest trend that also serves as a new channel, method, and experience for consumers in doing shopping activities. This research uses the SOR theory derived from the field of environmental psychology which explains how environmental stimuli can influence a person's response and impact the person's behavior. The objective of this research is to examine how live streaming shopping activates impulsive purchases through cognitive processes involving perceived usefulness, as influenced by factors like demand, convenience, interactivity, and playfulness. Through data analysis, demand, convenience, interactivity, and playfulness have a positive and significant influence on impulsive buying through perceived usefulness. It is important to keep in mind that since this study only examined Shopee Live users in Indonesia, the findings may not apply in other countries or circumstances. To examine the influence of demand, convenience, interactivity, and playfulness on impulsive buying through perceived usefulness in various contexts, further research can be conducted in other countries or focusing on several regions in Indonesia. A deeper insight into consumer behavior in the realm of live streaming shopping can be achieved by exploring other elements that might impact impulsive purchases. This can be done by thoroughly analyzing the various factors at play.

Keywords: Convenience, Impulsive Buying, Interactivity, Live Shopping, Perceived Usefulness.

1. Introduction

Internet has grown very rapidly, making it the largest information network in the world (Aprillia et al., 2024). By 2023, Indonesia ranks as the fourth highest internet-using country (Siahaan, 2024) The availability of the internet affects the potential growth of online consumers (Kominfo, 2024). According to the results of a survey conducted by BPS, as many as 63,5% of businesses utilize the internet as a means of digital marketing, especially through marketplaces. In addition, internet is also used to facilitate the shopping process, where shopping does not have to come to the store but through e-commerce (Kusumatrisna et al., 2023).

Indonesia has seen significant growth in the e-commerce sector, characterized by rapid growth rates (Widodo, 2024). With e-commerce, businesses from remote areas can reach their customers by utilizing e-commerce (Nurhayati-Wolff, 2023). E-commerce provides flexibility for consumers and businesses to conduct transactions without time and location restrictions (Pradana, 2015). E-commerce gives businesses a new feature with the aim of stimulating

consumers to buy products. As said by Geng et al. (2020), the live shopping feature on e-commerce platforms is now seen as the latest trend that also serves as a new channel, method, and experience for consumers in doing shopping activities. According to Chandrruangphen et al. (2022) and Wang et al. (2022) live streaming is real-time online video broadcasting with the person broadcasting called a streamer, where with live shopping consumers can shop by obtaining real-time information. Based on data in Statista (Nurhayati-Wolff, 2022), Shopee is one of the leading online shopping platforms for live shopping.

The appeal of live streaming has successfully increased people's shopping activities. As said by Zhang et al. (2024) it will be easy for consumers to make impulsive buying, if there are more live streaming activities. In other studies, one of the elements which play a role in influencing impulsive buying is live shopping (Ramadhani & Nugroho, 2024). In the realm of live streaming, the power of real social influence is evident as viewers come together to watch live broadcasts. When a large audience tunes in to live streams, people are likely to be swayed by the group dynamic, sometimes even copying the buying choices of their peers. These spontaneous purchases are called impulsive buying. Impulsive buying comes from stimuli obtained from internal and external sources, and the concept of impulsive buying has been a part of consumer behaviour since 1950. Consumers impulsive buying behaviour in e-commerce is a research topic that needs special attention, such as live shopping, which is a shopping tool that facilitates the process of consumers to fully engaged in impulsive buying situations due to the limited shopping time and number of products/services, and saw other people's purchase.

Watching live shopping is like enjoying impressions from online influencers or streamers on social media (Park & Lin, 2020). Streamers directly and continuously create consumer shopping demand in live shopping and offer an easier and more convenience shopping experience. When the streamers convey product or service information to consumers, then they create a shopping request, at that time consumers will immediately have the desire to buy the product or service (Harris & Shiptsova, 2007; Sun et al., 2019). Streamers prioritize interacting with consumers, responding to their question and creating an engaging shopping atmosphere during live session (Ha et al., 1998; Sedig et al., 2014). Interactivity in the context of live shopping provides an interactive experience that consumers feel with the brand or streamer who is live streaming, where consumers feel that a brand is actively communicating both in messages and the opportunity to respond (Bozkurt et al., 2021).

Live shopping helps improve the consumer shopping experience for the better, thus forming a sense of convenience for consumers (Wattimena & Dewi, 2024). As de Kerviler et al. (2016) said, convenience is one of the factors that influence consumer purchase intentions. Businesses that offer additional convenience to customers have the opportunity to enhance product purchasing interest and elevate overall shopping satisfaction (Brown 1989 in Lin et al. (2023)). In the context of live shopping streamers also attract consumers with content that is clear enough and provides new things to increase consumer playfulness in shopping. Playfulness is the tendency to generate pleasure from mere involvement in doing activities (Byun et al., 2017). It is emphasized that playfulness increases the consumer buying process (Lin et al., 2023).

This research focuses on analyzing the impact of demand, convenience, interactivity, and playfulness on impulsive purchasing behavior, specifically through the lens of perceived usefulness. Utilizing the Stimulus-Organism-Response (SOR) theory borrowed from environmental psychology, the study delves into how external factors can shape an individual's reactions and ultimately influence their actions (Mehrabian & Russell, 1974). In short, live shopping has an impact on how consumers behave in making impulsive purchases and affects

their psychological state. Previous studies have adopted various attribute concepts to examine the phenomenon of impulsive buying, but few studies have discussed the stimulus factors of live shopping (Lin et al., 2023). In previous research by Gu et al. (2023) used stimulus factors such as information richness, interactivity, vividness, social presence, and newness. Whereas in this study using other stimulus factor, namely demand, convenience, interactivity, and playfulness. In the research of Lin et al. (2023) the mediating variable used is perceived enjoyment as an organism in the form of affective reactions, in this study using the mediating variable perceived usefulness as an organism in the form of cognitive reactions.

2. Literature Review

2.1. Demand

As people become more interested in cultural, material and quality of live aspects, consumers demand pattern are evolving to become more diverse and tiered (Sun et al., 2016). Demand plays an important role in consumer behavior (J. J. Zhang et al., 2021). Demand is defined as a desire generated by preference, needs, or shortages of certain commodities (Lin et al., 2023). As stated by Carissa (2024) in her research where demand significantly encourages impulsive buying behavior among consumers. In addition, demand in live shopping is influenced by parasocial relationships, which increases the urge to buy, which leads to an increase in impulsive buying behavior among consumers (Purwanto & Yanti, 2024). Based on several studies, it is stated that high demand often leads to high expectations regarding perceived usefulness, and strong demand can lead to better consumer experiences, as companies strive to meet consumer needs, thereby increasing the perceived usefulness of brand offerings. Perceived usefulness significantly influences impulsive buying in live shopping, especially for experienced shoppers, highlighting the importance of demand-driven strategies such as scarcity and promotion in consumer behavior (Indriastuti et al., 2024; Miranda et al., 2024; Ramadhani & Nugroho, 2024).

H1 : Demand has a positive and significant effect on perceived usefulness
H6 : Demand has a positive and significant effect on impulsive buying
H10 : Demand has a positive and significant effect on impulsive buying through perceived usefulness

2.2. Convenience

Companies that can provide more convenience to consumers can increase their interest in buying products and create a more satisfying shopping experience (Brown, 1989 in Lin et al., 2023). Convenience is the ability of information to be accessed anytime and anywhere to meet user needs (Boadi et al., 2007). convenience is one of the factors that influence consumer purchase intentions (de-Kerviler et al., 2016; Lin et al., 2023). Convenience factors, such as ease of use and accessibility, can increase perceived usefulness. Improved convenience leads to higher consumer satisfaction, which in turn strengthens perceived usefulness (Ramadhani & Nugroho, 2024). Based on research by Miranda et al. (2024) and Lin et al. (2023), it is stated that convenience in live shopping increases impulsive buying. In other studies, it is explained that convenience in live shopping increases impulsive buying by reducing barriers to purchase, facilitating immediate decision making, and creating an attractive shopping experience that encourages spontaneous purchases (Zhang et al., 2024).

H2 : Convenience has a positive and significant effect on perceived usefulness
H7 : Convenience has a positive and significant effect on impulsive buying

H11 : Convenience has a positive and significant effect on impulsive buying through perceived usefulness

2.3. Interactivity

Interactivity refers to the degree to which two or more parties can communicate simultaneously and respond to each other through a medium that allows for the reciprocal exchange of messages (Rodríguez-Torrico et al., 2019). Interactivity refers to the level of consumer participation in interacting with and directly modifying the shopping experience through live streaming during the real-time transaction process (Kim & Hyun, 2016; Yim et al., 2017). Shopping via live streaming has the potential to increase the level of interactivity between streamers and consumers. This allows consumers to experience shopping at a physical store through bargaining interactions with streamers during live shopping session and allows them to participate in emerging trends in consumption patterns (Xu et al., 2020). Based on several studies, it is stated that a high level of real-time interactivity in live shopping increases perceived usefulness, because consumers feel more involved and informed during the shopping process. In addition, Interactivity in live shopping also increases impulsive buying by increasing perceived usefulness, mainly influenced by streamer characteristics. A high level of real-time interactivity in live shopping increases perceived usefulness, as consumers feel more involved and informed during the process of shopping (Lee et al., 2021; Miranda et al., 2024).

H3 : Interactivity has a positive and significant effect on perceived usefulness
H8 : Interactivity has a positive and significant effect on impulsive buying
H12 : Interactivity has a positive and significant effect on impulsive buying through perceived usefulness

2.4. Playfulness

Playfulness is defined as fun that enhances the consumer purchasing decision process in a virtual 3d store (Li et al., 2023). In research by Byun et al. (2017) confirmed that playfulness affects consumer behavior to initiate new products. Playfulness itself is mentioned as the tendency to produce pleasure from just involvement in doing an activity. In the context of live shopping, brands and sellers attract consumers with content that is clear enough and provides new or different things, and to increase consumer fun in shopping (Liu et al., 2020). Playfulness is often manifested through engaging content and interactive features, enhancing the shopping experience, leading to increased impulsive buying. The influencer's playful presentation style can also enhance and lead to higher levels of impulsive buying (Ma et al., 2023). This is supported by research conducted by Khasanah & Kuswanto (2023) where playfulness positively and significantly affects impulsive buying live shopping. Other research states that perceived usefulness is influenced by the interactive nature and playfulness of live shopping, which encourages consumers to see the platform as beneficial to their shopping needs (Miranda et al., 2024).

H4 : Playfulness has a positive and significant effect on perceived usefulness
H9 : Playfulness has a positive and significant effect on impulsive buying
H13 : Playfulness has a positive and significant effect on impulsive buying through perceived usefulness

2.5. Perceived Usefulness

Perceived usefulness refers to an individual's belief that a system is able to provide support in completing their task or job effectively (Hussein et al., 2019). This concept describes the extent to which a technology is considered capable of increasing efficiency and productivity

in the context of its users' work and business. When the level of perceived usefulness high, users believe that the technology provides real benefits and supports their activities (Moridis et al., 2018; Nurchayati et al., 2024). Many previous research studies indicate that how valuable individuals find technology, such as e-commerce, plays a crucial role in their decision to start using it (Mun et al., 2017; Shaw & Sergueeva, 2019). In addition, several studies have also revealed that perceived usefulness can directly influence impulsive buying behavior, here consumers tend to make spontaneous purchases when they experience a shopping experience that is perceived to be beneficial (Andika et al., 2023; Zuo & Xiao, 2021).

H5 : Perceived Usefulness has a positive and significant effect on impulsive buying

2.6. Impulsive Buying

Impulsive buying comes from stimuli obtained from internal and external sources, and the concept of impulsive buying has been part of consumer behavior since 1950. Impulsive buying is the act of buying goods without consideration and spontaneously (Ernestivita et al., 2023; Hong et al., 2023). Impulsive actions are influenced by pleasure-related drives and behaviors (Tee et al., 2023). According to Yuniarti et al. (2021) there are four dimensions of impulsive buying, namely spontaneity is a purchase that is not expected and motivates consumers to buy right away, in response to direct visual stimulation. Consumers buy a product without thinking or without planning in advance (Prasetyo, 2024). Power, compulsion, and intensity, which allows the motivation to put aside everything else and act instantly. Excitement and stimulation, the sudden urge to buy is often accompanied by emotion. When consumers see a product, the feeling of wanting to buy the product makes consumers unable to resist getting the product. Indifference to consequences, the urge to buy becomes difficult to resist so ignore the consequences. Consumers do not consider how the risk or good and bad of a product is felt when buying the product.

Based on the phenomena described above, the variables studied in this study are Demand (X1), Convenience (X2), Interactivity (X3), Playfulness (X4), Perceived Usefulness (Z), Impulsive Buying (Y). Then the framework in this study can be arranged as follows:

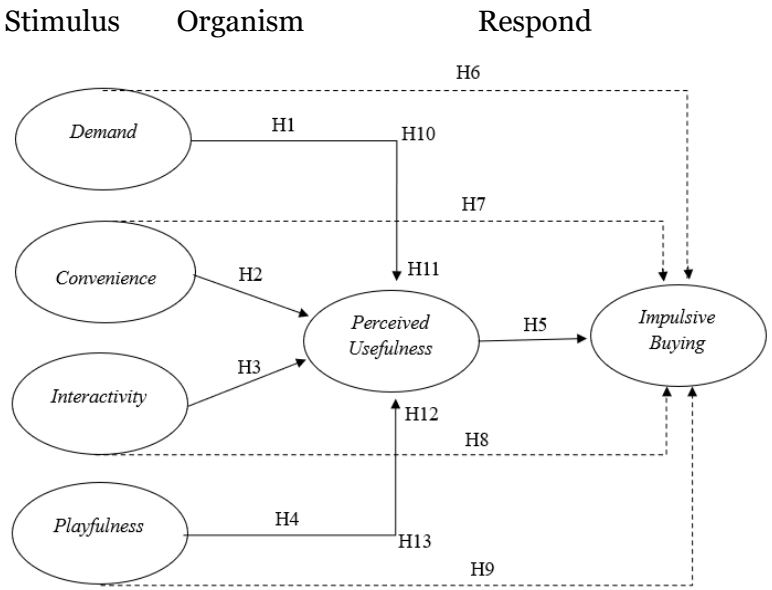

Figure 1. Research Framework

3. Methods

This study employs a quantitative methodology to examine aspects of consumer behavior within the live shopping environment. The quantitative approach was chosen because it allows researchers to measure predetermined variables, hypotheses, and obtain objective conclusions based on numerical data. According to Sugiyono (2019), research techniques known as quantitative methods are employed in studying specific groups or samples, where information is gathered through research tools and then examined using statistical analysis. The aim is to describe the characteristics of the data and test the hypotheses that have been formulated previously. Ghozali (2021) also states that quantitative research aims to test and confirm the theory of a phenomenon through systematic and controlled measurement of variables. Through this approach, the research focuses on collecting primary data from respondents which are then analyzed with the help of statistical tools to obtain an overview and test the relationship between variables that have been determined.

3.1. Sample Preparation

According to Sugiyono (2022) sample is understood as a part of the population that is selected in a representative manner, which reflects the number and main characteristics of the entire population that is the object of research. This study uses nonprobability sampling techniques, according to Sugiyono (2022), nonprobability sampling refers to selecting sample members from a population without each member having an equal opportunity for selection. Sugiyono (2022) defines purposive sampling as a technique that involves specific considerations. In this research, purposive sampling is employed with criteria for selecting samples, including:

a. Must be a minimum of 17 years of age
b. Have ever watched Shopee live
c. Used the Shopee live feature in the last 3 months
d. Watched Shopee live at least 1 time in the last 3 months
e. Made a purchase transaction on Shopee live at least 1 time in the last 3 months.

The sample in this study consisted of 405 Shopee live users. Data was obtained through several techniques such as interviews and questionnaires (Sugiyono, 2021). The questionnaires were shared digitally through social networking sites and also handed out in face-to-face interactions. The data collection process is carried out by ensuring respondents understand the questions and provide honest answers. The data gathered will be examined utilizing relevant statistical methods. The analysis method that can be used is SEM-PLS, the data that has been collected will be obtained using SMARTPLS software version 4.0. In addition, descriptive statistical analysis can also be used to provide an overview of the collected data (Widodo et al., 2025).

4. Results and Discussion

4.1. Research Results

4.1.1. Characteristics of Respondent

In this section data on the characteristics of respondents were displayed as follows in Table 1. Based on specific attributes, the majority of participants are Female individuals who are in the age range of 17 - 25 years old, with the majority of students that having an income below IDR 2,000,000. This result is important to include the “majority female” aspect, as this

is in line with Shopee's segmentation focus that prioritizes women as the main segment (ginee.com, 2022 Accessed on March 15, 2025, at 07.10 WIB). In addition, it is stated that women are more likely to respond to surveys conducted online, especially surveys conducted through websites (Becker, 2022; Smith, 2008). In the age category, the majority aged 17-25 years are generation Z, such as the results of Populix's research (2020) that online shopping activities are dominated by generation Z with an age range of 18-21 years and 22-28 years. Generation Z is often dubbed digital native, which is a generation born when the digital era was already underway and growing rapidly.

Table 1. Characteristics of Respondent

Category		Frequency	%
Gender	Male	127	31.4
	Female	278	68.6
Age	<17 years	0	0.0
	17 – 25 years	165	40.7
	26 – 35 years	110	27.2
	36 – 45 years	99	24.4
	> 45 years	31	7.7
Education	Senior High School	115	28.4
	Diploma	85	21.0
	Bachelor (S1)	121	29.9
	Master/Doctor	84	20.7
Occupation	Student	123	30.4
	Entrepreneur	106	26.2
	Housewife	52	12.8
	Content Creator	45	11.1
	Private Employee	40	9.9
	Other	39	9.6
Income	<IDR 2.000.000	127	31.4
	IDR 2.000.001 – IDR 5.000.000	125	30.9
	IDR 5.000.001 – IDR 10.000.000	125	30.9
	>IDR 10.000.001	28	6.9

4.1.2. Measurement Model Evaluation (Outer Model)

The questions were analyzed for accuracy and reliability to address the hypotheses effectively. The findings of the convergent validity analysis can be found in Table 2. All items related to demand, convenience, interactivity, playfulness, perceived usefulness, and impulsive buying have outer loading values > 0.7 and AVE values > 0.5. These results confirm that each item effectively reflects its respective variable, which establishes convergent validity (Fornell & Larcker, 1981; Ghozali, 2021). Table 3 displays the outcomes of distinctiveness validity. Each item has a cross-loading score above 0.70. Consequently, it can be inferred that the measures for the variables utilized in this research exhibit strong distinctiveness validity, indicating that each measure accurately assesses the intended variable without any redundancy in measurements across variables. (Ghozali, 2021). According to the data shown in Table 4, all variables in the reliability test have a composite reliability value and Cronbach's alpha value higher than 0.70. This suggests that every variable is deemed dependable and suitable for use in the research (Ghozali, 2021).

Table 2. Convergent Validity Results

Variable	Indicator	Outer Loading	AVE
Demand (X1)	DP	0,866	0,694
	DN1	0,858	
	DN2	0,843	
	DN3	0,819	
	DD	0,776	
Convenience (X2)	CD1	0,818	0,675
	CD2	0,793	
	CA	0,831	
	CT1	0,838	
	CT2	0,828	
	CT3	0,823	
	CB	0,820	
Interactivity (X3)	IA1	0,770	0,650
	IA2	0,822	
	IT1	0,824	
	IT2	0,854	
	IS1	0,779	
	IS2	0,785	
Playfulness (X4)	PI1	0,846	0,675
	PI2	0,816	
	PEn1	0,812	
	PEn2	0,843	
	PEx	0,789	
Perceived Usefulness (Z)	PUW1	0,818	0,679
	PUW2	0,848	
	PUI	0,783	
	PUU1	0,808	
	PUU2	0,836	
	PUE	0,847	
Impulsive Buying (Y)	IBSp1	0,814	0,661
	IBSp2	0,813	
	IBKk1	0,814	
	IBKk2	0,818	
	IBKs1	0,815	
	IBKs2	0,838	
	IBKa	0,781	

Table 3. Discriminant Validity Results

Indicator	Demand (X1)	Convenience (X2)	Interactivity (X3)	Playfulness (X4)	Perceived Usefulness (Z)	Impulsive Buying (Z)
DP	**0.866**	0.551	0.554	0.590	0.607	0.554
DN1	**0.858**	0.556	0.550	0.568	0.593	0.560
DN2	**0.843**	0.565	0.546	0.555	0.609	0.564
DN3	**0.819**	0.557	0.557	0.598	0.633	0.544
DD	**0.776**	0.523	0.504	0.534	0.509	0.525
CD1	0.624	**0.818**	0.601	0.646	0.653	0.613
CD2	0.521	**0.793**	0.528	0.525	0.601	0.555
CA	0.535	**0.831**	0.566	0.572	0.556	0.552
CT1	0.498	**0.838**	0.494	0.497	0.552	0.474
CT2	0.586	**0.828**	0.584	0.586	0.595	0.563
CT3	0.485	**0.823**	0.508	0.492	0.553	0.497
CB	0.532	**0.820**	0.535	0.501	0.564	0.529
IA1	0.496	0.460	**0.770**	0.490	0.512	0.452
IA2	0.533	0.579	**0.822**	0.536	0.562	0.518

Indicator	Demand (X1)	Convenience (X2)	Interactivity (X3)	Playfulness (X4)	Perceived Usefulness (Z)	Impulsive Buying (Z)
IT1	0.596	0.609	**0.824**	0.592	0.618	0.607
IT2	0.586	0.586	**0.854**	0.571	0.630	0.567
IS1	0.507	0.531	**0.779**	0.529	0.523	0.498
IS2	0.399	0.422	**0.785**	0.431	0.454	0.422
PI1	0.589	0.554	0.559	**0.846**	0.633	0.653
PI2	0.555	0.542	0.547	**0.816**	0.599	0.575
PEn1	0.569	0.619	0.568	**0.812**	0.614	0.615
PEn2	0.574	0.540	0.515	**0.843**	0.591	0.620
PEx	0.515	0.482	0.505	**0.789**	0.522	0.535
PUW1	0.581	0.611	0.553	0.603	**0.818**	0.611
PUW2	0.586	0.559	0.577	0.582	**0.848**	0.574
PUI	0.522	0.580	0.535	0.551	**0.783**	0.583
PUU1	0.614	0.589	0.576	0.611	**0.808**	0.578
PUU2	0.599	0.592	0.603	0.635	**0.836**	0.626
PUE	0.606	0.584	0.558	0.583	**0.847**	0.596
IBSp1	0.573	0.603	0.550	0.622	0.623	**0.814**
IBSp2	0.515	0.562	0.534	0.584	0.582	**0.813**
IBKk1	0.522	0.479	0.464	0.592	0.568	**0.814**
IBKk2	0.576	0.551	0.541	0.619	0.599	**0.818**
IBKs1	0.551	0.560	0.543	0.587	0.621	**0.815**
IBKs2	0.559	0.538	0.526	0.607	0.602	**0.838**
IBKa	0.445	0.457	0.480	0.550	0.505	**0.781**

Table 4. Reliability Test Results

Variables	Composite Reliability	Cronbach's Alpha
Demand (X1)	0,891	0,889
Convenience (X2)	0,921	0,920
Interactivity (X3)	0,900	0,893
Playfulness (X4)	0,882	0,880
Perceived Usefulness (Z)	0,906	0,905
Impulsive Buying (Y)	0,916	0,915

4.1.3. Structural Model Evaluation (Inner Model)

According to Table 5, the R-Square values indicate that the Perceived Usefulness variable achieved 0.671 while the Impulsive Buying variable reached 0.639. These findings demonstrate that the combined factors of Demand, Convenience, Interactivity, and Playfulness account for 67.1% of the variance in Perceived Usefulness, with the remaining 32.9% attributed to variables outside the scope of this research. Similarly, the model explains 63.9% of the variance in Impulsive Buying behavior, leaving 36.1% unexplained by factors beyond those investigated. The explanatory power of these models can be characterized as strong for Perceived Usefulness (R-Square = 0.671) and moderate for Impulsive Buying (R-Square = 0.639) (Chin, 1998 in Ghozali, 2021).

Demand, Convenience, Interactivity, Playfulness variables have a value of 0.074, 0.079, 0.051, 0.092 respectively where these values have a small effect on Perceived Usefulness. The Playfulness and Perceived Usefulness variables have a small effect on Impulsive Buying of 0.114 and 0.057. While the variables Demand, Convenience, and Interactivity have values of 0.014, 0.018, and 0.011 respectively which are below the provisions so that these variables are not significant to Impulsive Buying because they have the least influence on the F-Square value (Ghozali, 2021). This can be seen in Table 6. The last stage in analyzing a structural model includes assessing its ability to predict outcomes through the PLS-predict technique. Q2 predictive relevance is used to show how well a model can predict structured variables based on construct parameter estimates (Ghozali, 2021). Q2 value> 0 then the model has predictive relevance value, meaning that the model can predict structured variables well. A summary of the PLS-Predict results is presented in Table 7.

Table 5. R-Square Test Results

Variables	R-Square	Category
Perceived Usefulness	0,671	Strong
Impulsive Buying	0,639	Middle

Table 6. F-Square Test Results

Variables	Perceived Usefulness	Impulsive Buying
Demand	0,074	0,014
Convenience	0,079	0,018
Interactivity	0,051	0,011
Playfulness	0,092	0,114
Perceived Usefulness		0,057

Table 7. Q2 Predictive Relevance Results

Variables	Q^2 Predictive Relevance	RMSE	MAE
Perceived Usefulness	0,607	0,632	0,416
Impulsive Buying	0,660	0,588	0,393

4.1.4. Goodness of Fit Test

The effectiveness of the Goodness of Fit Test is analyzed to evaluate the suitability of the research model as a whole. The purpose is to determine the quality of the research model (Ghozali, 2021). According to Table 8, it is revealed that the SRMR value is 0.050. This indicates that the SRMR value is less than 0.08, as per Hair et al. (2021) which states that the SRMR value below 0.08 indicates a suitable model. It can be inferred that the model showcased in this research has a corresponding element. Figure 2 explains that the GoF value obtained is 0.644 and is included in the large GoF value. This means that the GoF value> 0.36 indicates that the model has a strong fit in explaining the data. Thus, the relationship between variables and constructs built in the model is proven to be good and in accordance with the data.

Table 8. Fit Model Results

	Saturated Model	Estimated Model
SRMR	0,050	0,050

$$Gof = \sqrt{AVE \times R^2}$$

$$Gof = \sqrt{0{,}672 \times 0{,}655}$$

$$Gof = 0{,}664$$

4.1.5. Hypothesis Testing

In this study, using a 95% confidence level with a significance of 5%. Then the t-statistic value used for two-tailed is 1.96 (Sholihin & Ratmono, 2020). The p test is used to determine the significance of the hypothesis. If the p-value <0.005, the variable is declared to have a statistically significant effect. Conversely, if the p-value> 0.005, the variable is considered not to have a significant impact (Hair et al., 2022). The path coefficient is used to determine whether the variable has a positive or negative impact (Hair et al., 2022). As stated in Table 9, all hypotheses in this study are accepted, where the t statistic value obtained is more than 1.96 and the p value is less than 0.05.

Table 9. Hypothesis Testing

Hypotheses	Path	Path Coefficient	t statistic	P value
H1	D→PU	0,239	4,733	0,000
H2	C→PU	0,245	5,596	0,000
H3	I→PU	0,193	3,939	0,000
H4	P→PU	0,268	5,602	0,000
H5	PU→IB	0,251	4,307	0,000
H6	D→IB	0,112	2,826	0,005
H7	C→IB	0,127	3,236	0,001
H8	I→IB	0,096	2,088	0,037
H9	P→IB	0,327	5,678	0,000

4.1.6. Mediation Effect

Table 10 presents the mediation analysis findings, revealing that H10, H11, H12, and H13 are all supported with t-statistics of 4.733, 5.596, 3.939, and 5.602 respectively, each demonstrating statistical significance (p = 0.000). The Variance Accounted For (VAF) analysis shows that demand, convenience, and interactivity exhibit partial mediation effects, as their VAF values exceed the 20% threshold. Conversely, playfulness demonstrates a VAF value of 17%, falling below the 20% criterion, indicating the absence of a meaningful mediation effect. This suggests that perceived usefulness does not function as a significant mediator in the relationship between playfulness and impulsive buying behavior, unlike its mediating role with the other three variables.

Table 10. Mediation Effect

Hypothesis	Path	Path Coefficient	VAF	t statistic	P value
H10	D→PU→IB	0,239	34,5%	4,733	0,000
H11	C→PU→IB	0,245	32,4%	5,596	0,000
H12	I→PU→IB	0,193	33,3%	3,939	0,000
H13	P→PU→IB	0,268	17%	5,602	0,000

4.2. Discussion

According to the findings from analyzing data using SMARTPLS version 4.0, it can be concluded that perceived usefulness plays a crucial role in influencing impulsive buying behavior. As Andika et al. (2023) said, they explain why perceived usefulness directly affects impulsive buying, because consumers are more likely to make spontaneous purchases when they find the shopping experience useful and profitable. Hypothesis testing results show that demand, convenience, and interactivity have a positive and significant influence on impulsive buying. This is in line with several studies which state that Demand in live shopping is influenced by positive interactions and perceived usefulness which increase and trigger impulsive buying behavior.

The convenience factor can encourage impulsive buying behavior, suggesting that perceived usefulness is often associated with the convenience experienced during the shopping process. The relationship between convenience and impulsive buying in live shopping is significant, as the immediacy of the format and interactive features increase consumer engagement and spur unplanned purchases. Ease of use and perceived social presence mediate the effect of interactivity on perceived usefulness, reinforcing the importance of user-friendly interfaces in live shopping. Interactivity in live shopping increases impulsive buying by increasing perceived usefulness, mainly influenced by streamer characteristics, as evidenced by research findings on consumer behavior. Experienced users highly value perceived usefulness, as it directly correlates with their impulsive buying behavior (Miranda et al., 2024; Rajput & Gandhi, 2024; Xu et al., 2020). However, the VAF value of 17% in the connection between playfulness and impulsive purchasing indicates that perceived

usefulness does not play a significant role as a mediator, as it is less than 20%. Therefore, this result contradicts previous studies which state that integrating playfulness into the shopping experience increases perceived usefulness, thereby increasing the likelihood of impulsive buying (Khasanah & Kuswanto, 2023; Purwanto & Yanti, 2024).

5. Conclusion

In conclusion, this study uses quantitative methods to determine the effect of demand, convenience, interactivity, and playfulness through perceived usefulness. The results showed that demand, convenience, interactivity, and playfulness have a positive and significant influence on impulsive buying. In addition, perceived usefulness plays a role in partially mediating between demand, convenience, interactivity on impulsive buying. While in playfulness, there is no significant mediation effect, where the mediating variable perceived usefulness does not play an important role in bridging the relationship between playfulness and impulsive buying.

Based on the results, Shopee Live as a live broadcast feature in the Shopee application has great potential in encouraging impulsive buying through increasing perceived usefulness, especially if the aspects of demand, convenience, and interactivity are optimized. Shopee is advised to ensure that the live content displayed is in accordance with the needs and interests of users (demand), as well as presenting a fast and easy shopping experience, for example with the direct purchase feature during the live (convenience). Interactivity also needs to be improved through sellers' quick responses to comments, interactive polls, and exclusive discounts that are only available during the live stream. This will strengthen the perception that Shopee Live is a useful and efficient shopping tool, thus encouraging impulse purchases. However, the element of playfulness in Shopee Live, such as the entertaining delivery style of sellers or the use of funny filters, although it may attract attention, does not directly increase perceived usefulness. Therefore, the entertainment element remains important to attract engagement, but the main strategy to encourage impulsive buying should be focused on aspects that increase the functional usefulness of the feature.

This research develops the theory of the impulsive buying behavior model by including the variable perceived usefulness as a mediating variable that contributes to understanding the psychological mechanism in impulsive buying via live streaming. Future researchers are expected to use other variables, such as emotional arousal, social influence, and others that are not examined in this study so that later it can be known more about what factors influence impulsive buying behavior. In addition, it can add moderating variables such as gender, age, and social status, so that it can be seen what can strengthen its influence. In future studies, it may be beneficial to expand the random sample size and include participants from various backgrounds to enhance the credibility of the findings. Utilizing both qualitative and quantitative methods can provide a more comprehensive analysis of the topic at hand.

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