

Impulsive buying in Live Streaming Commerce: The Role of Flow Experience, Parasocial Interaction and Immersion Relationship

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Abstract. The paradigm shifts and changes in consumer behavior have evolved alongside technological advancements and the progress of time. Since the COVID-19 pandemic, the use of online media has become widespread, including buying and selling activities. The increasing interest in online shopping has led many shopping centers to go bankrupt, which also impacts local tax revenues. This study aims to analyze the influence of flow experience, parasocial interaction, and immersion on impulsive buying tendencies in e-commerce live streaming. Data were collected from 400 respondents who are active users of live streaming platforms such as Shopee, TikTok, and Instagram in Medan. The study was conducted in 2024. The research employed the Stimulus-Organism-Response (S-O-R) method and was analyzed using SEM (Structural Equation Modeling). The study consisted of two phases: the Pilot Test and the Main Test. Data were collected through the distribution of questionnaires. The results show that in the goodness of fit test, two indices met the criteria: CMIN/DF (3.576), CFI (0.915), and SRMR (0.07). However, one index, RMSEA (0.085), did not meet the criteria. The SEM analysis results indicate that the standardized coefficient $\beta > 0$ and the p -value ≤ 0.05 , showing that the hypothesis is accepted. Thus, there is a relationship between flow experience ($p < 0.05$), parasocial interaction ($p < 0.01$), and immersion ($p < 0.001$) on impulsive buying tendencies. This study also shows that the stronger the consumers' flow experience and parasocial involvement, the more likely they are to make impulsive purchases during live streaming.

Keywords: Impulsive Buying, Live Streaming, Parasocial, Immersion, Flow Experience.

1 Introduction

Live streaming commerce, as an interactive media that delivers entertainment, social, and economic activities, has been developing since 2011 and skyrocketed during the COVID-19 pandemic, with 265 million viewers in March 2020 in China, according to the China Internet Network Information Centre [1]. The phenomenon of live shopping has been extensively researched by experts to explain what live shopping is, the

technology used, and marketing strategies through live shopping. However, there is limited literature that specifically addresses the emergence of consumer purchase interest through live shopping [1]. Social media is a platform that allows users to create, share, and exchange ideas and information within online communities and networks. Social media gives people the ability to interact with businesses and other people. Its purpose is to help consumer identify topics they're interested in, share consumer thoughts and ideas with others, and learn more about what is going on in the world around you [2]. Social media plays a significant role both for personal, business, or organizational purposes. For personal use, social media is typically utilized for friendship, information, entertainment, and self-actualization, and it can also be leveraged for business needs. On the commercial side, the use of social media for business purposes is now unavoidable [2]. Several writings have discussed and predicted the online sales model, suggesting that online sales will eventually surpass offline businesses. Businesses that take a while to embrace social media are probably going to find it difficult to compete for new clients. Some even go so far as to include capabilities like simple texting, which makes it even easier for customers to communicate with businesses [3]. The development and advancement of information and communication technology are currently evident in all aspects of society's life.

E-commerce expands to include more aspects of daily life as a result of this growth, since purchasing and selling goods and services is a basic human need. E-commerce is an essential instrument for spreading knowledge about the distinctiveness of items and widening the market to get a competitive edge in the global marketplace [3]. Online shopping is one of the many activities that can now be replaced by innovations that offer similar experiences online due to the rapid growth of technology. In addition to making it easier for consumers to choose products or services, online shopping simplifies transactions, which is why online shopping can replace offline shopping experiences [4].

Within an interactive virtual environment, live streaming commerce offers a more realistic, real-time, and dynamic shopping experience [4]. Consumers can make better purchasing decisions by using live streaming commerce since the information offered is of greater quality, such as product specifics, brand information, usage advice, and manufacturing procedures. This is because, in contrast to typical internet buying, where customers can only obtain information through photos and text, live streaming commerce provides real-time video information [4]. Additionally, harmonious and interpersonal relationships between sellers or broadcasters and consumers can easily form with the help of live streaming commerce features. Therefore, this study will examine three important aspects of live streaming commerce: consumer interaction with the live streaming commerce platform, consumer interaction with the broadcaster, and consumer immersion during live streaming. These aspects will be explored through the concepts of flow experience, parasocial interaction, and immersion. Flow experience refers to consumer interaction with stores on the live streaming commerce platform, while parasocial interaction refers to the interaction between consumers and broadcasters. Immersion refers to the depth of consumer engagement during live streaming events.

By 2025, e-commerce's contribution to Indonesia's digital economy is expected to increase by 18% [4]. The progress in information technology has provided online sellers with other avenues for product delivery or sales, one of which is live streaming. In live streaming sales, a broadcaster often broadcasts a live video showing several angles on a product and entices viewers to purchase it. The numerous opportunities created by live streaming commerce are not only appealing to business owners, but also merit further investigation. Researchers have found that one of the objectives of sellers using live streaming commerce is to entice customers to make impulsive purchases while the vendor is live broadcasting [4]. Previous studies have tended to focus on how a single factor influences impulsive buying in live streaming commerce, such as flow experience, parasocial interaction, or perceived enjoyment. However, a limitation of these earlier studies is the lack of research on other factors influencing impulsive buying behavior, as they only examine one factor. Thus, this research aims to fill the gap by studying several factors that influence impulsive buying in live streaming commerce. This study will examine three important aspects of live streaming commerce: consumer interaction with the live streaming commerce platform and consumer interaction with the broadcaster during live streaming, through the concepts of flow experience, parasocial interaction, and immersion.

The concept of flow experience comes from psychology. In short, the term "flow experience" describes the ideal state that arises when an individual is fully immersed in a task [5]. In the world of internet retail, flow experience has grown in importance [6]. Flow refers to an ideal state in which an individual might experience cognitive effects. Examples of this state include being fully immersed in the activity and its temporal cycle, being driven by the pleasure of the present, exhibiting profound participation, feeling focused, and having control over a situation [6]. Customers can enjoy the process while engaging in other activities and feel in control of their decisions and actions as a result of this flow experience [7]. The concept of flow experience is psychological. Simply defined, flow experience is the best way to characterize a condition in which someone is completely engrossed in an activity [5]. When it comes to online buying, a "flow experience" might be defined as a transient, subconscious state in which a person shops with complete focus, control, and delight. When someone is doing something, they are in a state of flow, which is the highest state of happiness and delight [8].

Parasocial Interaction (PSI) is the term coined by experts to describe the social relationship that develops between an audience and a media character [9]. Parasocial interaction is defined as deep intimacy and psychological relationships with someone you don't know firsthand. The intention to watch content on Instagram has been greatly influenced by the parasocial relationship that exists between idols and followers [9]. PSI now stands for the interaction on social media between influencers and followers. PSI is a result of the intimacy cultivated through the media rather than just the result of concurrently monitoring and conversing with influencers on social media. By following, liking, commenting on, and sharing posts, followers can engage with the influencers of their choice on social media, giving the impression of two-way communication. Parasocial interaction involves the personal engagement of media users with what they consume. This engagement includes seeking guidance from media figures, viewing someone on the media as a friend, imagining being part of a favorite program, and

desiring to meet the characters in the media. In marketing, parasocial interaction is an illusory experience, where consumers interact with media figures (such as presenters, celebrities, or characters) as if they are there and part of a reciprocal relationship [10].

In marketing, immersion is an implied sensation of connection to a concept (something contained in the consumer's mind that is not openly or implicitly conveyed), frequently connected with delving deep into something while remaining still [11]. Immersion in live streaming is defined as the degree to which the virtual system causes users to become focused, profoundly involved, and interested in virtual stimuli, or as if they are blocking out stimuli from their physical world [11].

2. METHOD

This study will employ a survey research method. The survey will be conducted online using a questionnaire instrument created in Microsoft Forms. Social media will then be used to distribute these Microsoft Forms. A brief description of live streaming commerce and screening questions to weed out respondents while accounting for the intended audience will be included in the survey questions. The 400 respondents who live in the city of Medan and utilize Instagram, TikTok, and Shopee for live streaming commerce comprise the demographic for this study.

Sampling for this study will be conducted using convenience sampling to ensure a broader and more diverse sample, while still fitting within the predetermined criteria. In this research, the researcher will use SPSS 25 to test the validity and reliability of the data. Additionally, AMOS 21 will be used to analyze the data using SEM (Structural Equation Modeling) to test the theoretical foundation developed based on the research results. This study will conduct a pilot test to provide information about potential failures in the main test, whether the proposed instrument is unsuitable or too complicated, and to analyze the validity of the main test [4].

In this study, the pilot test will consist of several elements: (a) interviews/Qualitative Pretest Interview (QPI) as a form of face validity, (b) reliability testing using Cronbach's Alpha, and (c) validity testing using construct validity. One of the procedures conducted in the pilot test is the Qualitative Pretest Interview (QPI) as a form of face validity, which involves interviewing subjects during the pilot test to create a shared understanding between the researcher and the research subjects. Reliability testing will also be conducted to assess the consistency of respondents' answers by measuring the reliability of the research using Cronbach's Alpha. Furthermore, validity testing of the indicators will be carried out using construct validity, with the Kaiser Meyer Olkin (KMO) test to assess the sample's ability to represent relationships between variables, ensuring that factor analysis is an accurate tool, so the research can proceed to the next stage. The main test will be conducted based on a revised questionnaire following the pilot test results.

The questionnaire will be distributed to obtain a minimum sample size of 380 respondents who meet the research criteria, which are: (1) respondents have watched live streaming commerce within the last 7 days, (2) reside in the city of Medan, and (3) complete the questionnaire within 5-25 minutes. A Goodness of Fit test will be performed to measure the degree of fit between a theoretical model and a set of empirical

data. The important goodness of fit indices to report include the chi-square divided by degrees of freedom (CMIN/DF), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Standardized Root Mean Square Residual (SRMR). Each goodness of fit index in this study can be considered adequate if the conditions are met. The minimum acceptable values for good fit in this study, namely, CMIN/DF ≤ 5 , RMSEA ≤ 0.08 , CFI ≥ 0.9 , and SRMR ≤ 0.08 . The study will also conduct hypothesis testing to determine whether the developed hypotheses are accepted or rejected, based on data collected from the main test.

3. RESULTS

3.1 Pilot Test

A pilot test was conducted with 6 informants who were interviewed while filling out the questionnaire to assess the alignment between the informants' understanding of the questionnaire and the operationalization and conceptualization of the variables being studied. The results of the pilot test indicated that the informants understood the context of the indicators. After the pilot test interviews and modifications to the indicators were completed, the questionnaire was then distributed to conduct reliability and validity tests for all research indicators. At this stage, the researcher successfully gathered 40 respondents who met the criteria for this study. The reliability test showed that the Cronbach's alpha values met the recommended threshold, indicating that all variables are consistent and reliable for use. Additionally, the validity test results demonstrated that all variables were deemed valid and usable, as they had good KMO values, above 0.7 (Table 1).

Table 1. Validity and Reliability Analysis

Validity and Reliability Analysis			
No	Indicator	Cronbach's Alpha	KMO
1	Personal Recommendation	0.763	0.872
2	Time Pressure	0.719	0.783
3	Platform Design	0.754	0.745
4	Likability	0.782	0.754
5	Expertise	0.798	0.793
6	Similarity	0.754	0.789
7	Visibility	0.799	0.798
8	Meta voicing	0.761	0.793
9	Instruction of Shopping	0.786	0.783
10	Flow Experience	0.753	0.873
11	Personal Interaction	0.749	0.793
12	Immersion	0.753	0.798
13	Impulsive Buying	0.783	0.831

*KMO = Kaiser Meyer Olkin

3.2 Demographic of Respondents

The results of the reliability and validity tests indicate that all the variables used can be considered reliable and valid, thus the research will proceed to the main test stage. In the main test, the researcher successfully collected a total sample of 400 respondents. Table 2 shows the demographic characteristics of the respondents. Based on Table 2, 69.5% of the respondents are female, with 44.75% aged between 18-25 years. The majority of respondents are students, accounting for 45.75%, followed by employees at 31.75%. The most common monthly expenditure range is Rp. 3,000,000 – Rp. 5,000,000, reported by 25.75% of the respondents.

Table 2. Demographic of Respondents

Dimension	Item	Frequency	Percentage
Gender	Man	122	3.05
	Woman	278	69.5
	Total	400	100
Age	<18 years	36	9
	18 – 25 years	179	44.75
	26 – 35 years	89	22.25
	36 – 45 years	65	16.25
	> 45 years	31	7.75
	Total	400	100
Job	Housewives	62	15.5
	Employee	127	31.75
	Student	183	45.75
	Entrepreneur	28	7
	Total	400	100
Monthly Expenditure	≤ Rp. 1,000,000	42	10.5
	Rp. 1,000,001 – Rp. 1,500,000	57	14.25
	Rp. 1,500,001 – Rp. 2,000,000	87	21.75
	Rp. 2,000,001 – Rp. 3,000,000	69	17.25
	Rp. 3,000,001 – Rp. 5,000,000	103	25.75
	Rp. 5,000,001 – Rp. 7,500,000	37	9.25
	≥Rp. 7,500,000	5	1.25
Total	400	100	

3.3 Structural Equation Modeling (SEM)

By using structural equation modeling (SEM) and the AMOS 21 application, the goodness of fit test and hypothesis testing were carried out (Table 3). Two indices, CMIN/DF ($\chi^2 = 1789.1$, $df = 656$, $CMIN/DF = 3.576$), CFI ($CFI = 0.915$), and SRMR ($SRMR = 0.07$), satisfied the criteria for the goodness of fit test. However, one goodness of fit index did not match the criteria: RMSEA ($RMSEA = 0.085$). A way to get goodness of fit is to make changes to the model while maintaining the theoretical structure. A way to get goodness of fit is to make changes to the model while maintaining the theoretical structure. However, the researcher did not make any changes since they intended to show the original results from the field without jeopardizing the true

findings [4]. In the hypothesis testing stage, a hypothesis is accepted if it meets the recommended criteria: standardized coefficient $\beta > 0$ and p-value ≤ 0.05 . If the hypothesis does not meet these criteria, it will be rejected.

Table 3. Goodness of Fit

Index Goodness of Fit	Cut-off Value	Value	Criteria
CMIN/DF	≤ 5	3.576	Acceptable
RMSEA	≤ 0.08	0.085	Not acceptable
CFI	≥ 0.9	0.951	Acceptable
SRMR	$\leq 0,08$	0.07	Acceptable

*Note: CMIN/DF = chi-square divided by degrees of freedom; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; SRMR = Standardized Root Mean Square Residual.

3.4 Hypothesis Analysis

Figure 1 shows the results of the SEM analysis. The standardized coefficient value $\beta > 0$ and p-value ≤ 0.05 indicate that the hypothesis is accepted. In the hypothesis testing stage, a hypothesis is accepted if it meets the criteria where the standardized coefficient value $\beta > 0$ and the p-value is ≤ 0.05 . If the hypothesis does not meet these criteria, it will be rejected. Based on Table 4, there is a relationship between personalized recommendation ($p < 0.01$), time pressure ($p < 0.001$), and platform design ($p < 0.05$) on flow experience. Furthermore, there is a relationship between likability ($p < 0.001$), expertise ($p < 0.01$), and similarity ($p < 0.01$) on parasocial interaction. Table 3 also explains the relationship between visibility ($p < 0.01$), meta voicing ($p < 0.01$), and instruction of shopping ($p < 0.001$) on immersion. Additionally, there is a relationship between flow experience ($p < 0.05$), parasocial interaction ($p < 0.01$), and immersion ($p < 0.001$) on impulsive buying tendencies.

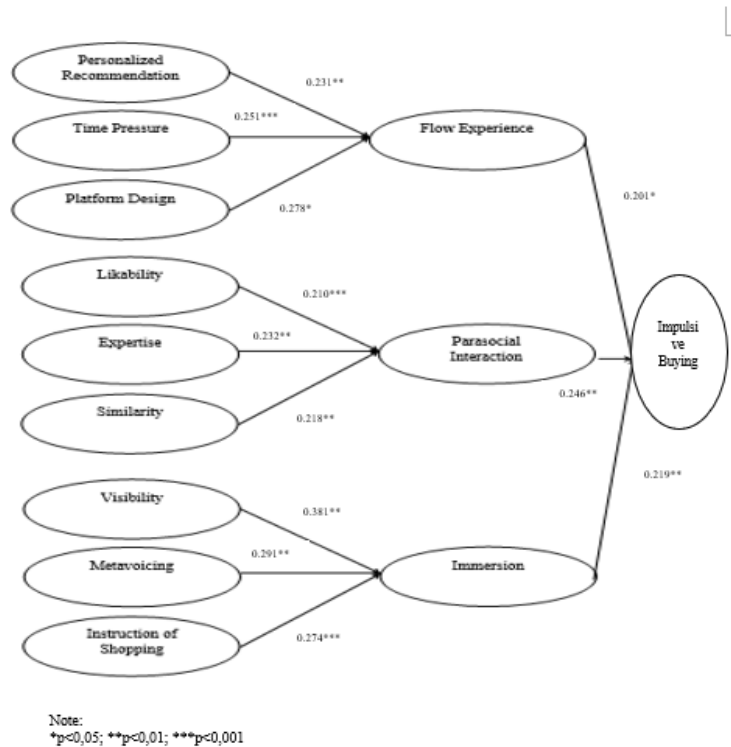


Fig. 1. The Results of Structural Equation Modeling

Table 4. Hypothesis Analysis

Hypothesis	Relation	P - value	Beta	Criteria	Interpretation
H1	PR>>FE	**	0.231	Accepted	There is a relationship between Personalized Recommendation and Flow Experience
H2	TP>>FE	***	0.251	Accepted	There is a relationship between Time Pressure and Flow Experience
H3	PD>>FE	*	0.278	Accepted	There is a relationship between Platform Design and Flow Experience
H4	LK>>PSI	***	0.210	Accepted	There is a relationship between Likability and Parasocial Interaction
H5	EX>>PSI	**	0.232	Accepted	There is a relationship between Expertise and Parasocial Interaction

H6	SM>>PSI	**	0.218	Accepted	There is a relationship between Similarity and Parasocial Interaction
H7	VI>>IM	**	0.381	Accepted	There is a relationship between Visibility and Immersion
H8	MV>>IM	**	0.291	Accepted	There is a relationship between Meta voicing and Immersion
H9	IS>>IM	***	0.274	Accepted	There is a relationship between Instruction of Shopping and Immersion
H10	FE>>DPI	*	0.201	Accepted	There is a relationship between Flow Experience and Impulsive Buying
H11	PSI>>DPI	**	0.246	Accepted	There is a relationship between Parasocial Interaction and Impulsive Buying
H12	IM>>DPI	***	0.219	Accepted	There is a relationship between Immersion and Impulsive Buying

*Note: *p<0.05; **p<0.01; ***p<0.001

4. DISCUSSION

As a result of the modern internet technological revolution, computer-mediated communication has progressed beyond text and graphics to include audio and video. More specifically, live video streaming services are a novel kind of social media that have surfaced [12]. Consumer purchasing behavior can be divided into planned and impulsive purchases. Planned purchasing refers to behavior that is premeditated by consumers. Impulsive buying behavior tends to be unplanned, but occurs because consumers are stirred by positive emotions and have an urgent desire to possess a particular item [13].

From the data analysis above, all hypotheses were accepted, indicating a relationship between Personalized Recommendation, Time Pressure, and Platform Design on Flow Experience. This aligns with the study by Husada et al. [8] which also found a relationship between Personalized Recommendation, Time Pressure, and Platform Design on Flow Experience. Similarly, the study by Sanjaya and Faiyah [5] supports this, showing that the higher the flow experience, the higher the impulse buying, and that promotions strengthen the relationship between these variables.

There is a relationship between Likability, Expertise, and Similarity on Parasocial Interaction. There is also a relationship between Visibility, Meta voicing, and Instruction of Shopping on Immersion. However, this is not in line with Pratama [10] research, which found that parasocial interaction with the content creator did not directly influence interest in purchasing MS Glow skincare products. Nevertheless, this research aligns with the findings of Rizky and Kuswati [9], which concluded that narrative involvement, social attractiveness, and parasocial interaction are three key factors

influencing impulsive buying. These factors are interrelated and can either strengthen or weaken the influence of one another. Narrative involvement enhances the sense of connection and identification with characters in a story, making individuals more susceptible to the social influence of those characters, including their beliefs, values, and behaviors. Social attractiveness increases the social influence of characters in the story. Individuals who find characters attractive and relatable are more likely to trust and mimic them, including their purchasing habits. Parasocial interaction strengthens the sense of connection and identification with the characters, making individuals more easily influenced by the characters' beliefs, values, and behaviors, including their purchasing habits. Thus, social attractiveness and parasocial interaction mediate the relationship between narrative involvement and impulsive buying.

There is a relationship between Flow Experience, Parasocial Interaction, and Immersion on Impulsive Buying Tendencies. This is consistent with the research by Maharani and Dirgantara [11], which stated that the variable immersion has a positive and significant influence on purchase intention. Live streaming shopping on TikTok has become an attraction due to the deep involvement and immersion experienced during live streaming shopping. This is also in line with the studies by Chen et al. [14], which found that immersion has a positive and significant impact on purchase intention. This shows that communication interaction is an important factor in determining impulsive buying behavior during social commerce shopping. In live streaming commerce, live streaming offers free access to audiences and product promotions [15]. The interactive communication style of influencers is crucial for creating positive emotions that drive impulsive purchases. The way sellers communicate with consumers is key to influencing consumers' purchasing behavior.

Through the presence of broadcasters and streamers, live streaming enhances social media by giving sellers a platform to display their faces, locations, and personalities (i.e., social presence). It also fosters interpersonal interaction between sellers and buyers, bringing offline sales tactics online. Live streaming provides a social presence and interaction that can improve the e-commerce shopping experience, lower buyer uncertainty, and boost buyer trust in merchants [16].

5. CONCLUSION

This study successfully examined three aspects that can influence impulsive buying tendencies in live streaming commerce, namely: (a) the relationship between live streaming commerce consumers in Medan and the platform used, through the concept of flow experience, (b) the relationship between live streaming commerce consumers in Medan and the broadcaster in live streaming commerce, through the concept of parasocial interaction, and (c) the relationship between consumers' immersion in live streaming e-commerce, through the concept of immersion.

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