

Drivers of Impulsive Buying in Live Streaming E-Commerce: The Roles of Scarcity, Uniqueness, Anxiety, and Time Pressure

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Abstract

This study examines impulsive buying behavior in live-streaming e-commerce, a rapidly growing digital shopping model that integrates real-time product demonstrations, consumer interaction, entertainment elements, and promotional stimuli. The background of this research is based on the increasing role of live-streaming commerce in shaping consumer purchasing decisions, particularly when consumers are exposed to scarcity appeals, product uniqueness, anxiety, and time-limited offers. This study aims to analyze the effects of scarcity, uniqueness, anxiety, and time pressure on impulsive buying behavior among consumers who have made transactions through live-streaming platforms. A quantitative approach was employed using survey data collected through Google Forms. Among 324 respondents, 213 met the research criteria and were included in the analysis using SPSS. The research instruments consisted of demographic questions and Likert-scale items designed to measure the study variables. The results show that uniqueness, anxiety, and time pressure have positive and significant effects on impulsive buying behavior, whereas scarcity has a positive but insignificant effect. Time pressure emerged as the strongest predictor, followed by anxiety and uniqueness. These findings indicate that impulsive buying behavior in live-streaming commerce is influenced more by psychological urgency, emotional tension, and perceived product distinctiveness than by scarcity appeals alone. The study concludes that marketers should manage time pressure and emotional cues ethically to encourage responsible consumer engagement.

INTRODUCTION

Digital technological advancement has driven significant changes in marketing practices and consumer behavior, one of which is the emergence of e-commerce (Kuupole et al., 2025). One rapidly growing innovation in e-commerce is live-streaming commerce, a real-time broadcast-based trading model that enables sellers to showcase products and interact directly with consumers (Lee & Chen, 2021). Through product demonstrations, interactive communication, entertainment, and streamer-driven persuasion, live-streaming commerce can create a more persuasive shopping experience and encourage impulsive buying behavior, particularly when consumers are exposed to time pressure, limited promotions, and emotional stimuli during live sessions (Kong et al., 2025; Lee & Chen, 2021; Sun et al., 2023). These stimuli include testimonials, promotions, discounts, and visually appealing platform displays

that attract consumers and encourage them to proceed to checkout with limited deliberation (Lim & Kim, 2021; Maymand & Ahmadinejad, 2011).

Live streaming is considered superior because it integrates direct communication, product demonstrations, entertainment, and social interaction (Wang et al., 2022). According to Tian et al. (2021), live streaming has been shown to generate three times stronger consumer engagement than traditional e-commerce and reduce product return rates by approximately 16.2%. This growth is further supported by the global live-streaming market, which is projected to reach USD 258.76 billion by 2034 (Precedence Research, 2025). In Indonesia, the estimated Gross Merchandise Value (GMV) of e-commerce reached USD 71 billion in 2025, driven by a 90% annual increase in live-streaming transactions (Google, Temasek, & Bain, 2025). Bloomberg (2025) also reported that live streaming on TikTok Shop Indonesia contributed Rp101 trillion in GMV, making Indonesia the second-largest market globally. These data indicate that shopping through live streaming has become an important component of the digital lifestyle of Indonesian consumers (Febriyantoro et al., 2024; Zhang et al., 2024).

In addition, the 2025 National Survey on Financial Literacy and Inclusion issued by the Financial Services Authority (OJK) indicates that young people aged 18–25 are financially vulnerable, with approximately 60% of Generation Z in Indonesia experiencing expenditures that exceed their income (Investor Trust, 2025). Live streaming, as one of the features of e-commerce, can be understood as a powerful digital stimulus that shapes consumptive behavior. This is supported by a Jakpat survey involving 2,474 respondents, which showed that 9 out of 10 Generation Z individuals watch live streaming, and 62% of them frequently make transactions through live-streaming platforms (Jakpat, 2025).

Approximately 90% of consumers are reported to make unplanned purchases at least occasionally, while 83.3% frequently engage in impulse buying (Minor & Hossain, 2017; Smith & Kabamba, 2022). In contrast, only 35.4% of shoppers carefully plan most of their purchases, while more than 42% admit that they lack planned shopping habits (Sheoran, 2024). Consequently, impulsive decisions are estimated to account for 30% to 50% of all consumer transactions globally (Hussain & Siddiqui, 2019; Smith & Kabamba, 2022). This phenomenon is particularly important to examine, especially in relation to consumers' intense emotional responses during digital shopping experiences.

Emotional responses in live streaming are reflected in consumers' evaluations of product scarcity, product uniqueness, limited-time offers, and anxiety arising from the fear of missing out (FOMO) on products, all of which can encourage consumers to engage in less rational purchasing behavior (Hao & Huang, 2025). Uniqueness, as one of the triggering factors, emphasizes originality or product differentiation from competing products. Unique products can attract consumers because they create a sense of exclusivity and distinctiveness, thereby encouraging spontaneous purchase intentions. According to Barton et al. (2022), perceived product scarcity has an overall effect of 31% on purchase intention. Regarding uniqueness, Retail Dive reported that 25% of respondents were willing to pay full price for limited-edition products (Retail Dive, 2023).

Meanwhile, time pressure arises when consumers feel compelled to make immediate decisions due to limited-time promotions, flash sales, countdown timers, or special offers during live-streaming sessions. Kong et al. (2023) showed that time pressure plays a significant role in strengthening consumers' flow experience in livestreaming e-commerce, which may

increase their tendency toward impulsive consumption. Furthermore, 62% of consumers have made unplanned online purchases due to limited-time discounts (Salsify, 2025; Food Navigator-USA, 2025). In other words, time pressure encourages rapid decision-making through promotional time limits or countdown features (Sun et al., 2023). These data indicate that unique, personalized, or limited products, along with time-limited promotions, can serve as stimuli that increase the potential for impulsive buying behavior in live-streaming commerce.

In addition to external factors, internal psychological aspects such as anxiety may also drive emotionally based purchasing decisions. Individuals with high levels of anxiety have been reported to demonstrate significant shopping behaviors in emotional consumption categories, such as events or parties (56%) and food products (29%) (Bahar & Villi, 2023). When pleasure and anxiety arise simultaneously, consumers may experience reduced cognitive control, causing their purchasing decisions to be more strongly influenced by emotions, urgency, and environmental stimuli (Cachón-Rodríguez et al., 2025; Lee & Chen, 2021; Liu et al., 2025).

Previous studies have shown that impulsive buying behavior is influenced by psychological characteristics, consumer motives, consumer resources, and marketing stimuli (Iyer et al., 2020). In the context of scarcity, Cengiz and Şenel (2024), Liu et al. (2025), and Siregar and Firdausy (2024) found that scarcity has a positive effect on impulsive buying behavior. However, Adyantari et al. (2025) and Rahmandani and Rahmidani (2025) found that scarcity does not have a significant direct effect. This inconsistency suggests that the effectiveness of scarcity may depend on product type, consumer trust, perceived product value, anxiety, perceived enjoyment, or competitive arousal.

In the context of uniqueness, Abdrabbo et al. (2025) explained that not all consumers seek uniqueness because perceptions of uniqueness may vary across individuals. In addition, research recommendations proposed by Cui et al. (2024) and Gong and Jiang (2023) indicate that the role of product uniqueness in live-streaming purchasing decisions requires further investigation. Regarding the anxiety variable, Yu (2022) found that anxiety has a positive relationship with impulse buying among university students in China. Kleitsch and Drămnescu (2025) further explained that anxiety in digital commerce can create emotional urgency, increase impulsivity, and reduce reflective decision-making. Dinh and Lee (2024) added that anxiety may encourage consumption behavior through social pressure and the desire not to be left behind by emerging trends. However, Rahmandani and Rahmidani (2025) found that anxiety does not directly affect impulse buying among Shopee Live consumers, as its effect may depend on other factors such as shopping enjoyment, trust, product type, and promotional sensitivity.

Furthermore, Sun et al. (2023) found that time pressure is positively associated with impulsive buying behavior in live-streaming e-commerce, particularly in terms of affective impulsive buying. This finding is supported by Salsabila et al. (2025), who found that time pressure has a positive and significant effect on impulsive buying behavior in fashion product purchases through live streaming among Generation Z consumers in Indonesia. However, Maymand and Ahmadinejad (2011) found that product availability time does not significantly affect impulse buying because consumers do not feel pressured as long as products remain available. This difference indicates that time pressure in live streaming may operate more

strongly due to limited-time promotions, streamer interaction, and competitive shopping atmospheres. Based on the preceding discussion, a research gap exists in explaining how scarcity, uniqueness, anxiety, and time pressure influence impulsive buying behavior in the context of live-streaming e-commerce in Indonesia. Therefore, these factors do not necessarily have consistent direct relationships with impulsive buying behavior and require further empirical examination.

METHOD

Data were collected using a questionnaire survey distributed randomly through Google Forms. Of the 324 respondents who completed the questionnaire, 213 met the research criteria by having previously conducted transactions through live-streaming platforms. The collected data were analyzed using SPSS. The questionnaire consisted of demographic questions and 18 measurement items assessed using a five-point Likert scale.

Regarding live-streaming usage duration, respondents who had used live-streaming platforms for 1–6 months represented the largest group ($n = 95$; 44.60%), followed by those who had used them for 1–3 years ($n = 44$; 20.66%), 6 months–1 year ($n = 43$; 20.19%), and more than 3 years ($n = 31$; 14.55%). TikTok Shop was the most frequently used platform ($n = 185$; 86.85%), followed by Shopee ($n = 101$; 47.42%), Instagram ($n = 97$; 45.54%), YouTube ($n = 47$; 22.07%), Facebook ($n = 7$; 3.29%), Tokopedia ($n = 5$; 2.35%), and other platforms ($n = 1$; 0.47%).

The most frequently purchased product categories were clothing ($n = 170$; 79.81%), accessories ($n = 96$; 45.07%), food and beverages ($n = 75$; 35.21%), electronics ($n = 65$; 30.52%), hobby-related products ($n = 63$; 29.58%), household supplies ($n = 42$; 19.72%), stationery ($n = 30$; 14.08%), skincare and makeup products ($n = 8$; 3.76%), and other products ($n = 7$; 3.29%). Most respondents accessed live-streaming platforms for less than 3 hours per day ($n = 195$; 91.55%), while fewer respondents accessed them for 3–6 hours per day ($n = 13$; 6.10%) or more than 6 hours per day ($n = 5$; 2.35%).

The respondents consisted of males ($n = 112$; 52.58%) and females ($n = 101$; 47.42%). Most respondents were aged 17–20 years ($n = 128$; 60.09%), followed by those aged 21–25 years ($n = 68$; 31.92%). In terms of educational background, most respondents were high school graduates ($n = 139$; 65.26%), followed by bachelor's degree graduates ($n = 67$; 31.46%) and master's degree graduates ($n = 7$; 3.29%). Regarding occupation, the majority of respondents were university students ($n = 182$; 85.45%), followed by professionals ($n = 13$; 6.10%), entrepreneurs ($n = 10$; 4.69%), freelancers ($n = 5$; 2.35%), housewives ($n = 2$; 0.94%), and private employees ($n = 1$; 0.47%).

Respondents came from various regions in Indonesia, with the largest proportions originating from Central Java ($n = 41$; 19.25%), Yogyakarta ($n = 37$; 17.37%), Riau ($n = 31$; 14.55%), and West Java ($n = 30$; 14.08%). Other respondents were distributed across East Java ($n = 13$; 6.10%), South Sumatra ($n = 10$; 4.69%), Bangka Belitung ($n = 7$; 3.29%), Jambi ($n = 6$; 2.82%), DKI Jakarta ($n = 5$; 2.35%), North Sumatra ($n = 4$; 1.88%), and other provinces with smaller proportions.

The measurement items consisted of three items assessing scarcity (Chen et al., 2022), two items assessing uniqueness (Wu et al., 2012), six items assessing anxiety (Dinh & Lee,

2023), two items assessing time pressure (Sun et al., 2023), and five items assessing impulsive buying behavior (Weun et al., 1998).

RESULT AND DISCUSSION

Before testing the hypotheses, the measurement quality of the research instruments was assessed through construct validity using factor analysis, reliability testing, and classical assumption tests. This terminology is used because the outputs include the Rotated Component Matrix, KMO and Bartlett's Test, and communalities. Therefore, the procedure is more appropriately referred to as construct validity assessment through factor analysis rather than pure SEM-based Confirmatory Factor Analysis (CFA). After the measurement model and statistical assumptions met the required criteria, multiple linear regression was conducted to examine the effects of scarcity, uniqueness, anxiety, and time pressure on impulsive buying.

Table 1. Discriminant and Convergence Validity

Indikator Variabel	Rotate Matric				
	1	2	3	4	5
S1			0.785		
S2			0.819		
S3			0.764		
UI					0.809
U2					0.832
A1	0.733				
A2	0.789				
A3	0.769				
A4	0.815				
A5	0.859				
A6	0.812				
TP1				0.800	
TP2				0.826	
IB1		0.812			
IB2		0.837			
IB3		0.857			
IB4		0.766			
IB5		0.644			

Source: Primary data processed using SPSS, 2026.

The construct validity assessment indicates that all indicators achieved factor loading values above the recommended threshold of 0.50 (Hair et al., 2014). The loading values for scarcity ranged from 0.764 to 0.819, uniqueness from 0.809 to 0.832, anxiety from 0.733 to 0.859, time pressure from 0.800 to 0.826, and impulsive buying from 0.644 to 0.857. These results suggest that all measurement items adequately represent their respective constructs. Therefore, all indicators were retained for further analysis.

The communalities results further support the adequacy of the measurement items. All indicators had extraction values above 0.50, indicating that more than 50% of the variance in each indicator could be explained by the extracted factors (Hair et al., 2014). The lowest communality value was found in IB5 at 0.597; however, this value remained above the

minimum acceptable threshold. Thus, the extracted factor structure sufficiently explained the variance of each item.

Table 2. Reliability and Factorability Assessment

Indikator Variabel	Cronbach Alpha	Communalities extraction	KMO bartlett tes
S1	0.781	0.708	0.00
S2		0.772	
S3		0.670	
UI	0.622	0.717	
U2		0.740	
A1	0.906	0.648	
A2		0.702	
A3		0.670	
A4		0.732	
A5		0.761	
A6		0.693	
TP1	0.740	0.763	
TP2		0.787	
IB1	0.899	0.772	
IB2		0.793	
IB3		0.779	
IB4		0.699	
IB5		0.597	

Source: Primary data processed using SPSS, 2026.

Reliability was evaluated using Cronbach's Alpha. The results show that scarcity had an alpha value of 0.781, uniqueness 0.622, anxiety 0.906, time pressure 0.740, and impulsive buying 0.899. Scarcity, anxiety, time pressure, and impulsive buying exceeded the recommended threshold of 0.70, indicating satisfactory to excellent internal consistency. Anxiety and impulsive buying demonstrated particularly strong reliability, with alpha values above 0.80. Although uniqueness had a Cronbach's Alpha value of 0.622, it can still be considered acceptable because the construct was measured using only two indicators and exceeded the minimum threshold of 0.60 commonly accepted in exploratory research (Hair et al., 2014). Overall, the measurement instrument demonstrated adequate validity and reliability. The KMO value was 0.855, exceeding the minimum threshold of 0.50. This indicates that the data had adequate sampling adequacy for factor analysis. Bartlett's Test of Sphericity was significant at 0.000, suggesting that the indicators were sufficiently correlated and suitable for factor extraction (Hair et al., 2014). Therefore, the data met the requirements for factor analysis.

Table 3. Linearity and Normality

Relationship	Deviation Linierity	Kolmogorog Smirnov
Scarcity to Impulsive buying	0.747	0.100
Uniqueness to Impulsive buying	0.233	
Anxiety to Impulsive buying	0.785	
Time pressure to Impulsive buying	0.187	

Source: Primary data processed using SPSS, 2026.

The normality test using the Kolmogorov-Smirnov procedure produced a significance value of 0.100, which is greater than 0.05 (Hair et al., 2014). This result indicates that the residuals were normally distributed. The linearity test also showed that all relationships between the independent variables and impulsive buying had Deviation from Linearity values greater than 0.05. Specifically, uniqueness to impulsive buying had a value of 0.233, anxiety to impulsive buying 0.785, time pressure to impulsive buying 0.187, and scarcity to impulsive buying 0.747. Therefore, the relationships between all predictors and impulsive buying were linear, fulfilling the assumptions for multiple linear regression.

Table 4. Hypotesis

Hypothesis	Beta	Significant	Result
H1.Scarcity - Impulsive buying	0,07	0.315	Not supported
H2.Uniqueness - Impulsive buying	0,13	0.024	Supported
H3.Anxiety - Impulsive buying	0,32	0.000	Supported
H4.Time pressure - Impulsive buying	0,34	0.000	Supported

Source: Primary data processed using SPSS, 2026.

Multiple linear regression was conducted to examine the effects of scarcity, uniqueness, anxiety, and time pressure on impulsive buying. The first hypothesis shows that scarcity had a positive insignificant effect on impulsive buying ($B = 0.053$, $\beta = 0.065$, $t = 1.007$, $p = 0.315$). This indicates that scarcity was not sufficient to directly trigger impulsive buying in this model. A possible explanation is that scarcity cues may only become effective when they activate internal psychological states such as urgency, anxiety, fear of missing out, or perceived value.

While, uniqueness had a positive and significant effect on impulsive buying ($B = 0.133$, $\beta = 0.132$, $t = 2.278$, $p = 0.024$). This means that consumers' perception of product uniqueness increases their likelihood of engaging in impulsive buying. It indicates when a product is perceived as distinctive, exclusive, or uncommon, consumers may feel a stronger urge to purchase it immediately. As a result of the third hypothesis, anxiety had a positive and significant effect on impulsive buying ($B = 0.259$, $\beta = 0.317$, $t = 5.348$, $p < 0.001$). This result of the third hypothesis indicates that consumers with higher levels of anxiety are more likely to make spontaneous purchase decisions. In live streaming commerce, anxiety may emerge when consumers feel worried about missing a limited product, discount, or promotional opportunity, which in turn encourages them to buy immediately. Furthermore, time pressure had a positive and significant effect on impulsive buying ($B = 0.277$, $\beta = 0.343$, $t = 5.491$, $p < 0.001$).

Among all predictors, time pressure had the strongest standardized effect, indicating that it was the most dominant driver of impulsive buying in the model. Overall, the findings show that time pressure, anxiety, and uniqueness significantly increase impulsive buying, whereas scarcity does not have a significant direct effect. Based on the standardized beta coefficients, time pressure was the strongest predictor, followed by anxiety, uniqueness, and scarcity.

This study examined the effects of scarcity, uniqueness, anxiety, and time pressure on impulsive buying in live streaming e-commerce. Drawing on the Stimulus-Organism-Response (S-O-R) framework, this study positions live streaming marketing cues as external stimuli that may activate consumers' internal psychological states and subsequently lead to impulsive

buying responses. The empirical findings show that uniqueness, anxiety, and time pressure significantly increase impulsive buying, whereas scarcity has a positive but non-significant effect. These results are important because they do not merely confirm or reject the proposed hypotheses, but also respond to several empirical inconsistencies and research gaps identified in previous studies on digital commerce, scarcity marketing, anxiety, and time-based promotional pressure.

The first hypothesis proposed that scarcity positively influences impulsive buying in live streaming e-commerce. However, the result shows that scarcity has a positive insignificant effect on impulsive buying. Although scarcity has long been considered a powerful marketing stimulus, the present result indicates that its effect may be conditional rather than universal. This finding is particularly relevant to Adyantari et al. (2025), Abdrabbo et al. (2025) & Rahmandani dan Rahmidani (2025) which found that scarcity did not directly affect impulsive buying behavior. However, this finding contrasts with other research such as Cengiz and Şenel (2024), Chen et al. (2022), Liu et al. (2025), Melati et al. (2025) which found that perceived scarcity positively affects impulsive buying.

Scarcity may serve as a stimulus, but the stimulus does not necessarily produce an immediate behavioral response unless it is translated into a psychological organismic state such as urgency, arousal, perceived value, anxiety, anxiety, or the urge to buy impulsively. Melati et al. (2024), states that the effect of scarcity claims on online impulse buying decisions should be explained through the mediating role of the urge to buy impulsively. Liu et al. (2025) also emphasized that scarcity-related mechanisms in live streaming become more meaningful when they are embedded in competitive psychological states, such as perceived scarcity and desire for achievement. Instead, scarcity may need to first activate consumers' emotional or cognitive tension before it can result in spontaneous purchasing behavior.

The second hypothesis proposed that uniqueness positively influences impulsive buying in live streaming e-commerce. The result supports this hypothesis, as uniqueness has a positive and significant effect on impulsive buying. This finding suggests that consumers are more likely to engage in impulsive buying when they perceive a product as distinctive, exclusive, rare, or symbolically different from common market offerings. This result is consistent with the need for uniqueness theory developed by Tian et al. (2001), Abdrabbo et al. (2025), and Nurmila et al. (2021) found that need for uniqueness has a significant positive effect on impulsive buying.

The significance of uniqueness is theoretically meaningful because prior research has more frequently discussed uniqueness in the context of luxury consumption, purchase intention, conspicuous consumption, or fashion identity, rather than in the specific setting of impulsive buying during live streaming commerce. This study extends this stream of research by showing that uniqueness is not only relevant for planned or symbolic purchases, but also for spontaneous purchase decisions in real-time digital selling environments. Within the S-O-R framework, uniqueness functions as a stimulus that activates internal evaluations such as perceived uniqueness, symbolic value, desire to own, and self-expressive motivation. These internal evaluations subsequently stimulate impulsive buying. Therefore, uniqueness should not be understood merely as a product attribute, but as a psychological and symbolic cue that can trigger immediate purchase decisions.

The third hypothesis proposed that anxiety positively influences impulsive buying in live streaming e-commerce. The result supports this hypothesis, as anxiety has a positive and significant effect on impulsive buying. This finding indicates that consumers who experience higher levels of anxiety are more likely to make impulsive purchases. In this context, anxiety reflects fear, worry, tension, unease, discomfort, and concern about missing a product, discount, promotion, or social shopping opportunity. Previous research, such as Christin et al. (2025) found that anxiety influences impulsive buying insignificantly. However, this result is consistent with Cachón-Rodríguez et al. (2025), Kleitsch and Drămnescu (2025), Dinh and Lee (2024), Yu (2022) and Xiao et al. (2022) who found that anxiety positively affects impulsive buying and may lead consumers to use buying behavior as a way to regulate emotional discomfort, especially when consumers experience intolerance of uncertainty and weak cognitive control. Moreover, perceived uncertainty can generate information overload and information anxiety, which subsequently encourage daily impulsive buying.

The fourth hypothesis proposed that time pressure positively influences impulsive buying in live streaming e-commerce. The result supports this hypothesis, as time pressure has the strongest positive and significant effect on impulsive buying. This finding indicates that time pressure is the most dominant predictor of impulsive buying in this study. The result is consistent with Liu et al. (2025), Salsabila et al. (2025), and Sun et al. (2023), who found that time pressure positively influences impulsive buying in live-streaming e-commerce, particularly through affective mechanisms and perceived value. Our research finding has contradictory results with Maymand and Ahmadinejad (2011) which found that availability of time did not significantly influence impulse buying due to ignoring temporal urgency.

Overall, the findings provide a more nuanced understanding of impulsive buying in live streaming e-commerce. Scarcity alone does not significantly predict impulsive buying, suggesting that scarcity cues may lose persuasive power when consumers perceive them as common, artificial, or routine marketing tactics. By contrast, time pressure, anxiety, and uniqueness significantly predict impulsive buying because they more directly activate psychological urgency, emotional tension, and symbolic desire. This pattern indicates that impulsive buying in live streaming commerce is not merely a response to promotional scarcity, but the outcome of a more complex interaction between external stimuli and internal psychological mechanisms. The study therefore extends the S-O-R framework by demonstrating that the effectiveness of live streaming stimuli depends on their ability to activate organismic states that are strong enough to generate immediate behavioral responses.

CONCLUSION

This study examined the drivers of impulsive buying behavior in live-streaming e-commerce by investigating the roles of scarcity, uniqueness, anxiety, and time pressure. The findings demonstrated that uniqueness, anxiety, and time pressure significantly influenced impulsive buying behavior, while scarcity showed a positive but insignificant effect. These results indicate that consumers' impulsive purchasing decisions in live-streaming environments are shaped more strongly by psychological and emotional mechanisms than by scarcity cues alone. Specifically, time pressure emerged as the strongest predictor, suggesting that limited-time offers, countdown features, and promotional urgency effectively stimulate consumers to make faster purchasing decisions. Anxiety also contributed significantly by

creating emotional tension and reducing consumers' cognitive control, while product uniqueness encouraged impulsive buying by increasing perceived exclusivity and product attractiveness.

The findings contribute to the growing literature on consumer behavior in digital commerce by providing empirical evidence that impulsive buying in live-streaming e-commerce is a multidimensional phenomenon involving both external marketing stimuli and internal psychological responses. The insignificant effect of scarcity suggests that scarcity appeals may not universally trigger impulsive purchases unless they are supported by other factors, such as emotional engagement, product value perception, or consumer involvement. Therefore, marketers and live-streaming sellers should strategically manage promotional urgency, emotional appeals, and product differentiation while maintaining ethical practices to avoid excessive consumer pressure. Future research is recommended to explore additional psychological and contextual factors, such as trust, social interaction, perceived enjoyment, streamer credibility, and consumer personality traits, to provide a more comprehensive understanding of impulsive buying behavior in evolving live-streaming commerce environments.

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