Paradoxical Role of Self-Control in Generation Z Blind Box Impulsive Buying

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Abstract
This study examined the effects of Fear of Missing Out (FOMO), electronic word-of-mouth (eWOM), and hedonic value on the impulsive buying of Blind Box products among Generation Z, with self-control as a moderator. A quantitative survey of 385 Generation Z TikTok users in Bandung who had purchased Blind Box products was conducted from January to March 2026, yielding 385 valid responses (100% response rate), analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results showed that FOMO (β=0.268, p<0.001), eWOM (β=0.323, p<0.001), and hedonic value (β=0.231, p < 0.001) positively and significantly influenced impulsive buying. Self-control also had a small but significant positive direct effect on impulsive buying (β=0.098, p=0.041) and positively moderated the relationships between FOMO, eWOM, and Hedonic Value with impulsive buying, revealing a paradoxical effect that contrasted with conventional assumptions about self-control. This study contributes to the development of the stimulus-organism-response theory and offers insights into consumer behavior in social commerce. The findings were limited to Generation Z consumers in Bandung and may not be generalized to other populations.

Keywords: *Blind Box, Fear of Missing Out, Impulsive Buying, Self-Control, Social Commerce*

1. INTRODUCTION

The development of the digital ecosystem and social media has significantly transformed consumer purchasing behavior, particularly among Generation Z, who are highly connected as digital natives. This shift has led to the emergence of impulsive buying, defined as spontaneous and unplanned purchasing decisions Ernawati (2021), which are increasingly driven by emotional rather than rational considerations. In the digital era, social media and social commerce intensify this behavior through strong visual and social stimuli Hao and Huang (2025), including urgency created by limited availability and digital exposure (Pramudita & Sari, 2022; (Dzaky & Prasetiyo, 2025). This behavior is also shaped by both utilitarian and hedonic motivations Indrawati, Ramantoko, Widarmanti, Aziz, and Khan (2022), especially in collectible product markets such as blind box products.

TikTok plays a major role in influencing Gen Z consumption behavior through algorithm-driven content, viral trends, and live shopping features (Ariani et al., 2025). The data show high platform usage in Indonesia and a strong tendency toward impulsive purchases triggered by TikTok content. Social commerce interaction further enhances perceived value and impulsive buying tendencies (Al-Hiyari, Kolsi, Lutfi, & Shakkour, 2024; Elisa, Fakhri, & Pradana, 2022). blind box products, originating from Japanese gacha culture, emphasize uncertainty and surprise Zhou, Mu, and Yang (2025) and offer strong hedonic value through emotional excitement and curiosity. The blind box market continues to grow rapidly in Asia, including Indonesia, driven by collector communities and viral trends such as labubu.

Impulsive buying in this context is influenced by Fear of Missing Out (FOMO) Hodkinson (2019), which creates urgency and emotional pressure Xu and Jin (2022), as well as electronic Word of Mouth (eWOM) such as reviews and unboxing content that strengthens social proof (Bhimasta, Surya, & Pramudita, 2025; Wongkitrungrueng & Assarut, 2020). Hedonic value also reinforces impulsive buying through increased pleasure and emotional satisfaction. However, previous findings remain inconsistent regarding the effects of FOMO, eWOM, and hedonic value on impulsive buying Xu and Jin (2022), Ariani et al. (2025), Kong and Lou (2023), and Kang, Lu, Guo, and Li (2021), indicating a research gap. Therefore, self-control is included as a moderating variable that influences individuals' ability to regulate emotional impulses (Sabirin, Elliyana, & Rosmiati, 2025; Tarigan & Yuliansyah, 2025; Zhang, Zhang, & Yan, 2024).

This study is grounded in stimulus–organism–response (SOR) theory and self-regulation failure theory (Baumeister, Bratslavsky, Muraven, & Tice, 2018). Generation Z in Bandung was selected as the research context because of its strong creative economy ecosystem, high digital consumption, and active TikTok and blind box collector communities, making it highly relevant for studying impulsive buying in social commerce environments. Thus, this study aims to examine the influence of Missing Out (FOMO), electronic word-of-mouth (eWOM), and hedonic value on impulsive buying among Generation Z when purchasing blind box products via TikTok, with self-control as a moderating variable. To guide this inquiry, the following research questions were formulated:

RQ1: How does FOMO influence impulsive buying among Generation Z TikTok users in Bandung?
RQ2: How does TikTok eWOM influence impulsive buying among Generation Z TikTok users in Bandung?
RQ3: How does hedonic value influence impulsive buying among Generation Z TikTok users in Bandung?
RQ4: How does self-control moderate the relationships between FOMO, TikTok eWOM, and hedonic value in impulsive buying?

2. LITERATURE REVIEW

The literature review in this study examines the relationship between Fear of Missing Out (FOMO), Electronic Word of Mouth (eWOM), hedonic value, self-control, and impulsive buying among Generation Z TikTok users, particularly in the context of the blind box phenomenon, which has shifted consumer behavior toward more emotional and spontaneous decisions. Consumer behavior is defined as a psychological, social, and emotional process of selecting and purchasing products, whereas digital consumption is increasingly influenced by emotional and social experiences. Impulsive buying refers to spontaneous purchasing driven by emotional impulses Luo, Cheah, Hollebeek, and Lim (2024), strengthened by digital stimuli and instant promotions (Hao & Huang, 2025).

FOMO is defined as the fear of missing out on others' experiences Xu and Jin (2022), driven by the need for digital connectedness Luo et al. (2024), and encourages trend-following behavior (Hodkinson, 2019). Empirical studies show that FOMO significantly influences impulsive buying (Ayyasy, Belinda, & Dirgantara, 2025; Tandon, Dhir, Almugren, AlNemer, & Mäntymäki, 2021). Similarly, eWOM, defined as online consumer reviews and opinions, serves as information that shapes purchase decisions Xu and Jin (2022), where TikTok reviews, comments, and unboxing videos strongly affect consumer behavior Erkan and Evans (2016), and increase impulsive buying (Ramdani, Sulhaini, & Handayani, 2024).

Hedonic value, defined as a pleasure-based consumption experience (Zhou et al., 2025), contributes to emotional satisfaction in shopping, particularly in blind box purchases, where surprise elements increase impulsive buying tendencies. The relationships among these variables are explained using stimulus-organism-response theory, where FOMO and eWOM act as stimuli, hedonic value as an organism, and impulsive buying as a response. Additionally, self-regulation failure theory Baumeister et al. (2018) explains reduced self-control due to ego depletion in highly stimulating digital environments. Self-control is defined as the ability to regulate behavior toward long-term goals Zhang et al. (2024) and moderates impulsive buying tendencies, where high self-control reduces impulsive behavior (Devi, Arafat, & Maliah, 2025).

Overall, FOMO, eWOM, and hedonic value positively influenced impulsive buying, whereas self-control moderated these effects. However, few studies have focused on blind box consumption among Generation Z TikTok users in Bandung, creating a research gap that this study addresses. To systematically map the existing academic landscape and highlight empirical inconsistencies among the key variables, the most pertinent prior studies are consolidated in Table 1.

Table 1. Summary of prior studies and research gaps

Author (Year)	Core Variables	Main Findings	Identified Gaps / Inconsistencies
Zhou et al. (2025)	Hedonic value, collecting behavior, and blind box	Hedonic value was found to be a strong driver of unplanned purchases, particularly through uncertainty-based gratification in the context of blind boxes.	Social media influence and self-regulatory mechanisms were not included in the analysis.
Lee, Wyllie, and Brennan (2025)	Consumer motivations, blind box purchases, and hedonic value	Uncertainty and novelty-seeking tendencies were identified as the primary emotional catalysts for blind box purchasing behavior.	Moderation effects of individual traits, such as self-regulation, have not been empirically tested.
Wongkitrungrueng and Assarut (2020)	eWOM, social commerce, purchase and intention	Live streaming and seller engagement build consumer trust and strengthen purchase engagement in social commerce environments.	This study focused on trust and engagement outcomes rather than extending to the actual impulsive buying behavior triggered by FOMO and hedonic stimuli.
Barbu Kleitsch and Drămnescu (2025)	FOMO, digital stimuli, and consumer behavior	FOMO functions as a potent social pressure that accelerates immediate consumption decisions among digital consumers.	The findings were primarily derived from traditional retail contexts, leaving mystery or blind box product niches unexplored.
Ayyasy et al. (2025)	Self-control, social commerce, and impulsive buying	FOMO drives impulse buying, with social media influencer engagement strengthening this relationship.	The role of self-control as a potential moderator of the FOMO-impulsive buying relationship in influencer-driven digital environments has not been examined, revealing a critical gap.
Xu and Jin (2022)	FOMO, social comparison, shopping value, and impulse buying	FOMO increases impulse buying through heightened social comparison and an elevated perceived shopping value.	The boundary conditions under which FOMO effects intensify, such as repeated high-stimulus exposure, were not examined.
Hao and Huang (2025)	Perceived time pressure, impulse buying, and live streaming commerce	Perceived time pressure drives impulsive purchasing through a moderated mediation mechanism in live streaming contexts.	Self-control as a potential moderator of the time-pressure-impulse buying link was not considered in this study.
Tandon et al. (2021)	FOMO, social media use, and systematic review	FOMO has been consistently linked to compulsive social media engagement and impulsive consumption behaviors across multiple studies.	Most of the reviewed studies treated self-control as a uniformly protective trait without testing for paradoxical or context-dependent effects.

Chaudhary, Jain, Gupta, and Aggarwal (2025)	Impulse buying tendency, normative evaluation, and self-control	Self-control and social media exposure were identified as key normative influences shaping impulsive buying tendencies, with self-control functioning as a restraining factor.	While this study revisited the role of self-control and social media in normative impulse buying, it did not specifically examine high-stimulation, algorithm-driven platforms such as TikTok or collectible/gacha-style products such as Blind Boxes, leaving the boundary conditions of self-control's protective role in such contexts unexamined.

The research framework is based on the theoretical relationship between Fear of Missing Out (FOMO), electronic Word of Mouth (eWOM), hedonic value, self-control, and impulsive buying. In this study, FOMO (X_1), TikTok eWOM (X_2), and hedonic value (X_3) were positioned as independent variables, impulsive buying (Y) as the dependent variable, and self-control (Z) as a moderating variable that influences the strength of these relationships. FOMO is assumed to increase impulsive buying because the fear of missing out on trends and social experiences encourages individuals to make spontaneous purchases to remain socially relevant. Similarly, TikTok eWOM functions as a digital social stimulus through reviews, comments, and unboxing videos that shape consumer perceptions and strengthen impulsive buying tendencies, while hedonic value generates emotional experiences such as pleasure, entertainment, and surprise, which further enhance impulsive purchase intentions. These relationships are explained through the stimulus-organism-response theory, where FOMO and eWOM act as external stimuli, hedonic value represents the internal organism state, and impulsive buying is the behavioral response. In addition, self-regulation failure theory Baumeister et al. (2018) explains that low self-control increases susceptibility to emotional impulses, thereby strengthening the influence of FOMO, eWOM, and hedonic value on impulsive buying.

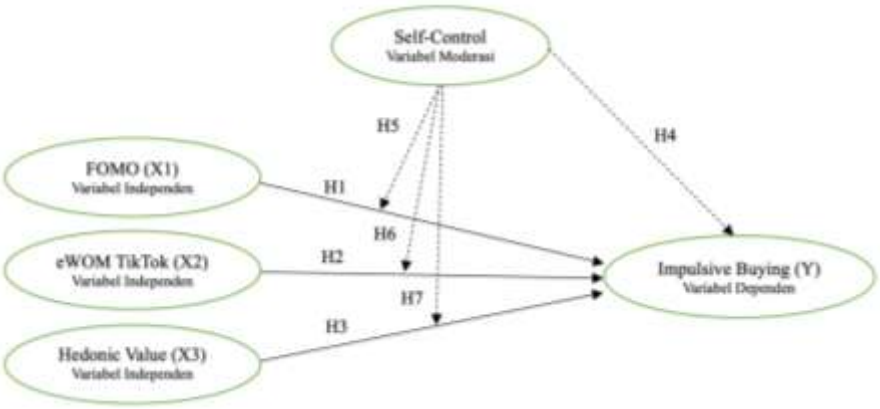

Figure 1. Thinking framework

Figure 1 shows the relationships between FOMO, eWOM, hedonic value, self-control, and impulsive buying, where FOMO, eWOM, and hedonic value act as independent variables, impulsive buying as the dependent variable, and self-control as a moderating variable. The model explains that FOMO, eWOM, and hedonic value increase impulsive buying behavior, while self-control weakens or strengthens these effects based on SOR and self-regulation failure theories. Based on the theoretical framework and prior empirical evidence, the following hypotheses are proposed:

H_1: FOMO has a positive and significant effect on impulsive buying among Generation Z Blind Box consumers on TikTok

H_2: TikTok eWOM has a positive and significant effect on impulsive buying among

Generation Z Blind Box consumers on TikTok

H_3: Hedonic value has a positive and significant effect on impulsive buying among Generation Z Blind Box consumers on TikTok

H_4: Self-control has a positive and significant direct effect on impulsive buying among Generation Z Blind Box consumers on TikTok

H_5: Self-control negatively moderates the relationship between FOMO and impulsive buying, such that the positive effect of FOMO on impulsive buying is weaker among individuals with higher self-control

H_6: Self-control negatively moderates the relationship between TikTok eWOM and impulsive buying, such that the positive effect of eWOM on impulsive buying is weaker among individuals with higher self-control

H_7: Self-control negatively moderates the relationship between hedonic value and impulsive buying, such that the positive effect of hedonic value on impulsive buying is weaker among individuals with higher self-control

3. METHODOLOGY

This study uses a quantitative approach with a survey method to examine the influence of FOMO, TikTok eWOM, and hedonic value on impulsive buying and the moderating role of self-control. A quantitative design was chosen to test causal relationships using statistical analysis, while the survey method was applied to collect primary data through structured questionnaires. A cross-sectional design was used to capture respondents' perceptions at a single point in time because of practical limitations. Ethical approval was obtained from the Research Ethics Committee of Telkom University, and informed consent was obtained from all participants.

The population consists of Generation Z in Bandung (born 1997–2012) who are active TikTok users and have purchased blind box products. Since the exact population is unknown, it is treated as infinite, and the Cochran formula with a 5% error rate was used to determine a sample of 385 respondents. Purposive sampling was applied to ensure that respondents met the criteria, such as being Generation Z, Bandung residents, active TikTok users, exposed to blind box content, and having purchased blind box products. A pilot test involving 30 respondents confirmed the instrument's validity and reliability (outer loading > 0.70 and Cronbach's alpha > 0.70). Data were collected online via Google Forms from January to March 2026, resulting in 385 valid responses (100% response rate).

The questionnaire used a 5-point Likert scale, with variables including FOMO (X_1), TikTok eWOM (X_2), hedonic value (X_3), impulsive buying (Y), and self-control (Z). Operational indicators were adapted from established theories covering social anxiety, urgency, and engagement (FOMO), such as review credibility and valence (eWOM), pleasure and emotion (hedonic value), impulsivity and emotional drive (impulsive buying), and behavioral, cognitive, and emotional control (self-control), as summarized in Table 2.

Table 2. Operationalization of research variables

Variables	Dimension	Conceptual Indicators	Source
Fear of Missing Out (X_1)	Social anxiety and peer belongingness	(FOMO1) anxiety about missing trending blind box products discussed on TikTok. (FOMO2) concerns about being left behind when peers obtain rare or limited-edition items. (FOMO3) compulsion to continuously monitor viral unboxing trends. (FOMO4) urge consumers to purchase immediately when a product is labeled as limited stock. (FOMO5) discomfort when unable to participate in ongoing blind box trends. (FOMO6) tendency to compare their own collection with peers' collections seen on social media.	Przybylski, Murayama, DeHaan, and Gladwell (2013)

TikTok eWOM (X_2)	Engagement intensity and content reliability	(eWOM1) frequency of reading reviews and comments on TikTok before purchasing the product. (eWOM2) trust in the opinions shared by other TikTok users about the blind box products. (eWOM3) rely on unboxing videos as a reference for purchase decisions. (eWOM4) influence of testimonials shared by content creators on purchase intention. (eWOM5) engagement with positive comments on the Blind Box-related content. (eWOM6) frequency of sharing or discussing the blind box content with other users.	Hennig-Thurau, Gwinner, Walsh, and Gremler (2004)
Hedonic Value (X_3)	Sensory pleasure and thrill excitement	(HED1) feeling entertained while browsing the blind box content on TikTok. (HED2) experiencing excitement from the surprise element of the blind box products. (HED3) purchasing blind box products as a form of self-rewarding. (HED4) enjoyed the process of collecting and displaying blind box items. (HED5) using blind box shopping as a form of emotional escapism. (HED6) feeling a sense of fun and fantasy when opening a blind box.	Babin, Darden, and Griffin (1994)
Self-Control (Z)	Behavioral constraint and impulse regulation	(SC1) the ability to resist the urge to impulsively buy blind box products. (SC2) the ability to limit the time spent browsing TikTok blind box content. (SC3) capacity to suppress impulsive financial spending urges. (SC4) the ability to think rationally before completing a purchase. (SC5) capacity to delay gratification when tempted by promotions. (SC6) ability to control emotional reactions to viral blind box trends.	Tangney, Boone, and Baumeister (2018)
Impulsive Buying (Y)	Spontaneous action and unplanned purchase	(IB1) making spontaneous purchase decisions without prior planning. (IB2) experiencing sudden and overwhelming urges to buy blind box products. (IB3) purchasing additional blind box items beyond the original intention. (IB4) feeling a strong impulse to buy immediately after seeing the related content. (IB5) making purchases driven by emotions rather than rational evaluation. (IB6) difficulty in resisting the urge to buy when exposed to blind box promotions.	Chaudhary et al. (2025)

The data analysis technique used in this study was the Partial Least Squares-based Structural Equation Modeling (PLS-SEM) method with the assistance of SmartPLS 4.0 software. The analysis was carried out in two main stages: evaluation of the measurement model (outer model) and evaluation of the structural model (inner model). The outer model was evaluated through instrument validity and reliability tests. Convergent validity was assessed based on outer loading values ≥ 0.70 and Average Variance Extracted (AVE) ≥ 0.50 (Hair, Risher, Sarstedt, & Ringle, 2019). Discriminant validity was tested using the Fornell-Larcker criteria and the Heterotrait-Monotrait Ratio (HTMT), with an HTMT value of < 0.85. Reliability testing was carried out using Cronbach's Alpha and Composite Reliability values with a minimum limit of ≥ 0.70 so that the construct was declared reliable and consistent.

Next, an inner model evaluation was conducted to assess the relationships between the variables in the research model. Structural model testing was conducted through R-square (R^2), Q-square (Q^2), Goodness of Fit (GoF), Standardized Root Mean Square Residual (SRMR), Normed

Fit Index (NFI), and RMS Theta values. Hypothesis testing was conducted using a t-statistic value ≥ 1.96 and a p-value < 0.05 to determine the significance of the influence of the research variables. In addition, descriptive analysis was used to describe respondents' perceptions of each research variable based on the average value (mean) on a five-point Likert scale.

PLS-SEM was selected over Covariance-Based SEM (CB-SEM) for three reasons. First, this study aims to predict and explain the variance in impulsive buying (a prediction-oriented objective), for which PLS-SEM is more appropriate than the covariance-fitting objective of CB-SEM (Hair et al., 2019). Second, the research model includes a complex moderation structure involving three interaction terms (self-control × FOMO, self-control × eWOM, and self-control × hedonic value), which PLS-SEM handles efficiently. Third, PLS-SEM does not require the assumption of multivariate normality, which is suitable given the ordinal nature of the Likert-scale data. The significance testing of the path coefficients was conducted using a bootstrapping procedure with 5,000 resamples and a bias-corrected and accelerated (BCa) confidence interval at the 95% level, in accordance with the recommendations of Hair et al. (2019).

4. RESULTS AND DISCUSSION

The sample of this study consisted of 385 Generation Z respondents domiciled in Bandung City who actively use TikTok and have purchased blind box products, in accordance with the purposive sampling criteria outlined in the Methodology section. A descriptive analysis was conducted to provide an overview of respondents' perceptions of research variables, including Fear of Missing Out (FOMO), electronic Word of Mouth (eWOM), hedonic value, impulsive buying, and self-control among Generation Z TikTok users in Bandung. Data processing was performed using the SmartPLS 4.0 application by examining the mean, median, standard deviation, minimum, and maximum values of each research indicator.

Table 3. Descriptive statistics of research variables

Indicator	Mean	Median	Standard Deviation	Min Scale	Max Scale
FOMO1	3.727	4.000	1.171	1	5
FOMO2	3.730	4.000	1.155	1	5
FOMO3	3.782	4.000	1.121	1	5
FOMO4	3.813	4.000	1.122	1	5
FOMO5	3.740	4.000	1.117	1	5
FOMO6	3.790	4.000	1.093	1	5
eWOM1	3.792	4.000	1.159	1	5
eWOM2	3.740	4.000	1.119	1	5
eWOM3	3.810	4.000	1.127	1	5
eWOM4	3.738	4.000	1.156	1	5
eWOM5	3.764	4.000	1.125	1	5
eWOM6	3.727	4.000	1.145	1	5
HED1	3.722	4.000	1.152	1	5
HED2	3.743	4.000	1.141	1	5
HED3	3.681	4.000	1.177	1	5
HED4	3.649	4.000	1.132	1	5
HED5	3.727	4.000	1.156	1	5
HED6	3.706	4.000	1.128	1	5
IB1	4.068	4.000	0.975	1	5
IB2	4.029	4.000	0.946	1	5
IB3	4.047	4.000	0.936	1	5
IB4	3.997	4.000	0.984	1	5
IB5	4.062	4.000	0.918	1	5
IB6	3.956	4.000	0.981	1	5
SC1	3.792	4.000	1.090	1	5
SC2	3.717	4.000	1.133	1	5

SC3	3.740	4.000	1.128	1	5
SC4	3.727	4.000	1.103	1	5
SC5	3.691	4.000	1.156	1	5
SC6	3.753	4.000	1.102	1	5

Based on the descriptive analysis results in Table 3, all indicators show mean values ranging from 3.649 to 4.068, indicating that the respondents generally agreed with the questionnaire statements. The median value of 4.000 across all indicators confirms that the responses are concentrated at the agree level. Overall, respondents' perceptions of FOMO, eWOM, hedonic value, impulsive buying, and self-control were high. For FOMO, the mean values ranged from 3.727 to 3.813, with FOMO4 as the highest (3.813) and FOMO1 as the lowest (3.727), indicating a relatively high tendency to experience fear of missing trends and information related to blind box content on TikTok. The eWOM variable ranges from 3.727 to 3.810, with eWOM3 being the highest and eWOM6 being the lowest, showing that TikTok reviews and recommendations strongly influence purchasing decisions. The hedonic value ranged from 3.649 to 3.743, indicating positive but slightly more varied emotional and enjoyment experiences compared to other variables.

Impulsive buying recorded the highest scores (3.956–4.068), with IB1 as the highest and IB6 as the lowest, indicating strong spontaneous purchasing behavior after exposure to TikTok content. Self-control ranged from 3.691 to 3.792, suggesting a relatively good ability to regulate purchasing impulses, although impulsive behavior may still occur under certain conditions. The standard deviation values (0.918–1.177) indicated moderate response variation, showing that the data were sufficiently representative. Overall, Gen Z TikTok users in Bandung demonstrated high levels of FOMO, eWOM exposure, hedonic value, and impulsive buying, alongside relatively good self-control. Finally, outer loading ≥ 0.70 indicates that all indicators meet the convergent validity requirements in the PLS-SEM model.

Table 4. Outer loading test results

Indicator	eWOM	FOMO	Hedonic Value	Impulsive Buying	Self-Control
eWOM1	0.904				
eWOM2	0.872				
eWOM3	0.886				
eWOM4	0.865				
eWOM5	0.873				
eWOM6	0.853				
FOMO1		0.902			
FOMO2		0.901			
FOMO3		0.875			
FOMO4		0.850			
FOMO5		0.854			
FOMO6		0.875			
HED1			0.913		
HED2			0.907		
HED3			0.882		
HED4			0.879		
HED5			0.860		
HED6			0.863		
IB1				0.833	
IB2				0.838	
IB3				0.828	
IB4				0.793	
IB5				0.783	
IB6				0.813	

SC1					0.891
SC2					0.889
SC3					0.888
SC4					0.870
SC5					0.847
SC6					0.828

Based on the results of data processing using SmartPLS 4.0 in Table 4, all indicators in the eWOM, FOMO, hedonic value, impulsive buying, and self-control variables have outer loading values above 0.70. The highest outer loading value was found in the HED1 indicator at 0.913, followed by the FOMO1 indicator at 0.902. Meanwhile, the lowest outer loading value was found in the IB5 indicator at 0.783, followed by IB4 at 0.793. Although these two values are the closest to the 0.70 threshold among all indicators, both were retained in the model because they remained comfortably above the minimum acceptable loading of 0.70 Hair et al. (2019), they did not substantially affect the AVE of the Impulsive Buying construct (which remained above 0.50, as shown in Table 5), and their removal would have reduced the conceptual completeness of the Impulsive Buying construct, as IB4 and IB5 capture distinct facets (immediacy of impulse and emotion-driven purchasing) that are theoretically central to the impulsive buying construct. Despite being the lowest values in the model, these indicators still met the minimum required limit.

For the eWOM variable, the outer loading values ranged from 0.853 to 0.904, indicating that all indicators were able to strongly represent the eWOM construct. The FOMO variable had an outer loading value ranging from 0.850 to 0.902, while Hedonic Value showed a relatively high value with a range of 0.860–0.913. The Impulsive Buying variable had an outer loading value between 0.783 and 0.838, and the Self-Control variable had a value between 0.828 and 0.891. Overall, these results demonstrate that all indicators were highly correlated with their respective latent constructs. Therefore, all indicators were declared valid, and none needed to be eliminated from the research model.

Table 5. Cross-loadings test results

Indicator	eWOM	FOMO	Hedonic Value	Impulsive Buying	Self-Control
eWOM1	0.904	0.131	0.174	0.318	0.138
eWOM2	0.872	0.126	0.168	0.307	0.133
eWOM3	0.886	0.128	0.171	0.312	0.136
eWOM4	0.865	0.125	0.167	0.304	0.132
eWOM5	0.873	0.127	0.168	0.307	0.134
eWOM6	0.853	0.124	0.165	0.300	0.131
FOMO1	0.131	0.902	0.168	0.291	0.132
FOMO2	0.131	0.901	0.168	0.291	0.132
FOMO3	0.127	0.875	0.163	0.283	0.128
FOMO4	0.123	0.850	0.158	0.275	0.124
FOMO5	0.124	0.854	0.159	0.276	0.125
FOMO6	0.127	0.875	0.163	0.283	0.128
HED1	0.176	0.170	0.913	0.308	0.072
HED2	0.175	0.169	0.907	0.306	0.072
HED3	0.170	0.164	0.882	0.297	0.070
HED4	0.170	0.163	0.879	0.296	0.069
HED5	0.166	0.160	0.860	0.290	0.068
HED6	0.167	0.161	0.863	0.291	0.068
IB1	0.293	0.269	0.281	0.833	0.168
IB2	0.295	0.271	0.282	0.838	0.169
IB3	0.291	0.267	0.279	0.828	0.167
IB4	0.279	0.256	0.267	0.793	0.160

IB5	0.276	0.253	0.264	0.783	0.158
IB6	0.286	0.263	0.274	0.813	0.164
SC1	0.136	0.130	0.070	0.180	0.891
SC2	0.136	0.130	0.070	0.180	0.889
SC3	0.136	0.130	0.070	0.179	0.888
SC4	0.133	0.127	0.069	0.176	0.870
SC5	0.130	0.124	0.067	0.171	0.847
SC6	0.127	0.121	0.065	0.167	0.828

Discriminant validity at the indicator level was further examined using cross-loadings (Table 5). The results show that every indicator has its highest loading on its intended construct and considerably lower loadings on all other constructs. For example, the eWOM1 indicator loads at 0.904 on eWOM but only between 0.126 and 0.318 on the other four constructs, while the SC1 indicator loads at 0.891 on self-control but no higher than 0.180 on the remaining constructs. This pattern was consistent across all 30 indicators, confirming that each indicator was empirically distinct and appropriately assigned to its corresponding latent construct, further supporting the discriminant validity established through the HTMT and Fornell-Larcker criteria. In addition to outer loading, convergent validity was evaluated using the Average Variance Extracted (AVE) value. AVE is used to measure a construct's ability to explain the variance of its indicators. A construct is considered to have convergent validity if its AVE value is greater than 0.50, meaning that it explains more than 50% of the variance in its indicators.

Table 6. Average Variance Extracted (AVE) value

Variables	AVE value	Criteria	Information
eWOM	0.767	≥ 0.50	Valid
FOMO	0.768	≥ 0.50	Valid
Hedonic Value	0.782	≥ 0.50	Valid
Impulsive Buying	0.664	≥ 0.50	Valid
Self-Control	0.755	≥ 0.50	Valid

The test results in Table 6 show that all research variables have AVE values above 0.50. The hedonic value variable has the highest AVE value of 0.782, indicating that this construct can explain 78.2% of the variance in its indicators. Furthermore, the FOMO variable had AVE values of 0.768, 0.767, 0.755, and 0.664 for eWOM, self-control, and impulsive buying, respectively. The high AVE values for all constructs indicate that the latent variables in this study are able to explain the indicator variance significantly, compared to the variance due to measurement error. Thus, all research constructs are deemed to have adequately met the convergent validity criteria and are suitable for use in the next stage of analysis. Discriminant validity was used to ensure that each construct in the model was empirically distinct and did not measure the same concept. In this study, discriminant validity testing was conducted using the Heterotrait-Monotrait Ratio of Correlations (HTMT) method. A construct is considered to have discriminant validity if the HTMT value is below 0.85.

Table 7. Results of the discriminant validity test

Construct	eWOM	FOMO	Hedonic Value	Impulsive Buying	Self-Control
eWOM	-				
FOMO	0.151	-			
Hedonic Value	0.203	0.198	-		
Impulsive Buying	0.378	0.347	0.362	-	
Self-Control	0.163	0.156	0.086	0.219	-

Based on the test results in Table 7, all HTMT values between constructs are below the maximum limit of 0.85. The highest HTMT value is found in the relationship between eWOM and

Impulsive Buying at 0.378, while the lowest value is found in the relationship between hedonic value and self-control at 0.086. All of these values are still far below the required threshold. These results indicate that each construct in the research model has empirically distinct characteristics, and there is no overlap between constructs. Thus, discriminant validity based on the HTMT approach was established. Discriminant validity testing was also strengthened using the Fornell-Larcker Criterion approach. This test was conducted by comparing the square root of the AVE value of each construct with the correlation values between other constructs. A construct is considered to have discriminant validity if the square root of the AVE value is greater than its correlation with the other constructs.

Table 8. Fornell-Larcker criterion results

Construct	eWOM	FOMO	Hedonic Value	Impulsive Buying	Self-Control
eWOM	0.876				
FOMO	0.145	0.876			
Hedonic Value	0.193	0.186	0.884		
Impulsive Buying	0.352	0.323	0.337	0.815	
Self-Control	0.153	0.146	0.079	0.202	0.869

Based on the results in Table 8, the square root of the AVE value for each construct is on the main diagonal of the table and all have higher values than the correlations between other constructs. The eWOM variable had a square root of AVE of 0.876, FOMO of 0.876, hedonic value of 0.884, impulsive buying of 0.815, and self-control of 0.869. All of these values are greater than the construct's correlations with other variables. This indicates that each construct has a good ability to differentiate itself from the other constructs in the research model. Therefore, discriminant validity based on the Fornell-Larcker criterion is met. Construct reliability testing was conducted to determine the internal consistency of the indicators in measuring the latent construct. In this study, reliability was measured using Cronbach's alpha and composite reliability (ρa). A construct is considered reliable if its Cronbach's alpha and composite reliability values are ≥ 0.70.

Table 9. Results of construct reliability test

Variables	Cronbach's Alpha	Composite Reliability (ρa)	Criteria	Information
eWOM	0.939	0.944	≥ 0.70	Reliable
FOMO	0.940	0.944	≥ 0.70	Reliable
Hedonic Value	0.944	0.947	≥ 0.70	Reliable
Impulsive Buying	0.899	0.901	≥ 0.70	Reliable
Self-Control	0.935	0.939	≥ 0.70	Reliable

Table 9 show that all constructs have Cronbach's alpha and composite reliability values above 0.70. The hedonic value variable had the highest reliability value, with a Cronbach's alpha of 0.944 and a composite reliability of 0.947. The FOMO variable has a Cronbach's alpha value of 0.940 and a composite reliability of 0.944, while the eWOM variable has values of 0.939 and 0.944, respectively. Furthermore, the self-control variable had a Cronbach's alpha value of 0.935 and a composite reliability of 0.939. The impulsive buying variable also showed good reliability, with a Cronbach's alpha value of 0.899 and a Composite Reliability of 0.901. High reliability values across all constructs indicate that the research instrument has excellent internal consistency. Therefore, all variables in this study were considered reliable and capable of producing stable and consistent measurements.

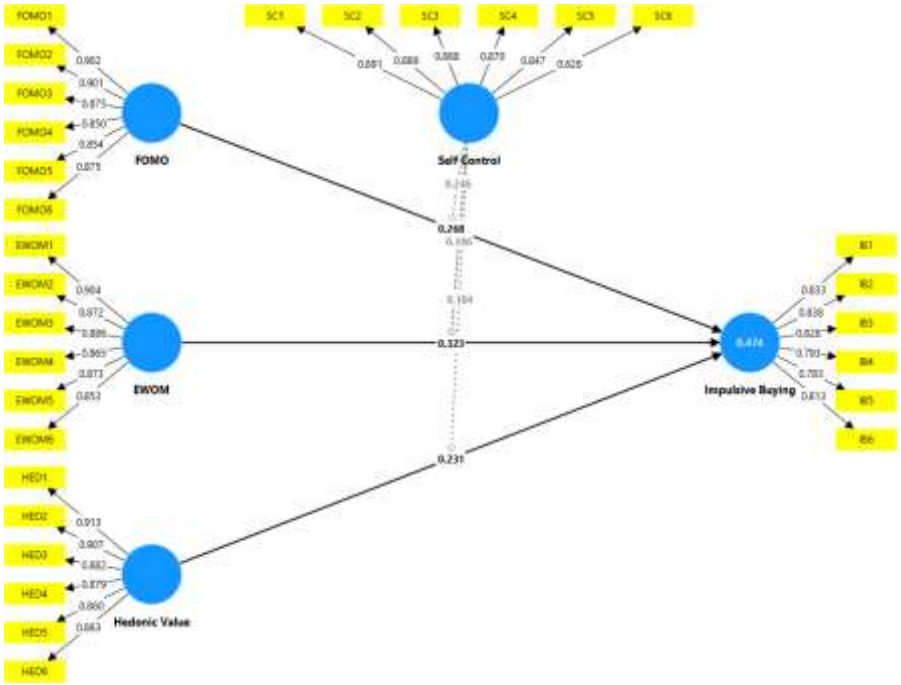

Figure 2. PLS-SEM structural model diagram (path coefficient)

Based on Figure 2, the research structural model consists of three main independent variables: Fear of Missing Out (FOMO), electronic word-of-mouth (eWOM), and hedonic value; one moderating variable, self-control; and one dependent variable, impulsive buying. The estimation results show that all the independent variables have a positive relationship with impulsive buying. The largest path coefficient is shown by the eWOM variable on impulsive buying, with a value of 0.323. This indicates that exposure to review content, unboxing videos, testimonials, and blind box product recommendations via TikTok has the most dominant influence on driving impulsive buying behavior among Generation Z in Bandung City. Furthermore, the FOMO variable has a path coefficient of 0.268, indicating that social anxiety due to fear of being left behind increases the tendency for impulsive buying. The hedonic value variable has a coefficient of 0.231, indicating that the emotional experience, pleasure, and entertainment of blind box products also contribute to the emergence of impulsive buying.

In addition to its moderating role, self-control also exhibited a small but statistically significant positive direct effect on Impulsive Buying, with a path coefficient of 0.098 (t=2.040, p=0.041), thus supporting H_4. Although weak in magnitude (f^2=0.017), this direct effect is theoretically noteworthy because it contradicts the conventional expectation that self-control should directly reduce impulsive behavior. One plausible explanation is that Generation Z consumers with higher self-control possess greater awareness of product value and trends; thus, when they decide to purchase a blind box, the decision is more deliberate but still executed impulsively in terms of timing. This finding foreshadows the broader paradoxical pattern observed in the moderation results (H_5-H_7), suggesting that self-control operates differently than expected in the high-stimulation digital environment of TikTok-driven blind box consumption.

In addition to the direct effect, the model also shows the moderating effect of self-control on the relationship between the independent variables and impulsive buying. The largest moderating interaction was found in the relationship between self-control × FOMO and impulsive buying, with a coefficient of 0.246. These results indicate that self-control does not weaken the influence of FOMO but rather strengthens it in the context of digital consumption on the TikTok platform. This unexpected and paradoxical outcome, whereby self-control amplifies rather than curbs blind box impulsive buying, can be interpreted more deeply through the theoretical lens of ego depletion theory (Baumeister et al., 2018). Within the high-stimulation social commerce ecosystem of TikTok, Generation Z consumers are continuously subjected to intense emotional and psychological pressure, including gamified live streams, sudden flash-sale notifications, and highly persuasive

unboxing content. Resisting these relentless digital triggers requires substantial and sustained conscious cognitive effort. According to the foundational principles of self-regulation failure, an individual's volitional capacity is inherently limited and susceptible to exhaustion. When Generation Z users repeatedly exert mental energy to suppress their purchasing desires, their self-regulatory resources gradually become depleted. Once this state of ego depletion is reached, cognitive control is lost. Paradoxically, consumers who originally exhibited higher self-control may experience a pronounced rebound effect, ultimately engaging in even more intense, spontaneous, and uninhibited impulsive buying behavior as a psychological release from the accumulated social media fatigue. This finding is consistent with the ego depletion theory proposed by Baumeister et al. (2018), which suggests that self-regulatory resources are limited and may become depleted after continuous cognitive effort. In highly stimulating digital environments, individuals may experience reduced self-regulation capacity, leading to increased impulsive buying tendencies.

This finding contrasts with several prior studies that have positioned self-control as a buffer that weakens the influence of digital stimuli on impulsive purchasing. Self-control negatively moderated the relationship between FOMO and eWOM on impulsive buying, consistent with the conventional protective view of self-control. However, recent evidence suggests that self-control does not always effectively restrain impulsive buying behavior. Artadita and Firmialy (2024) found that self-control had an insignificant moderating role in the relationship between shopping enjoyment and impulse buying among Generation Z consumers, indicating that highly stimulating digital environments may diminish the protective effect of self-regulation. The discrepancy between these earlier findings and the present results may be attributed to differences in the intensity and continuity of digital stimulus exposures. Earlier studies generally examined general e-commerce or social media contexts in which exposure to stimuli is intermittent, allowing self-regulatory resources to recover between exposures. In contrast, the TikTok-driven blind box environment examined in this study involves continuous, algorithm-amplified exposure to FOMO, eWOM, and hedonic stimuli, which may exceed the threshold at which self-control can be sustained, leading to ego depletion and a reversal of its protective functions. This suggests that the moderating role of self-control may be boundary-conditioned by the intensity and persistence of digital stimulation, an important boundary condition that future research should examine more directly. Table 10 presents a summary of the hypothesis testing results, including the path coefficients (β), t-values, p-values, and decisions for each hypothesis.

Table 10. Summary of hypothesis testing results

Hypothesis	**Path**	**β**	**t-value**	**p-value**	**Decision**
H_1	FOMO → Impulsive Buying	0.268	6.313	0.000	Supported
H_2	eWOM → Impulsive Buying	0.323	8.227	0.000	Supported
H_3	Hedonic Value → Impulsive Buying	0.231	5.491	0.000	Supported
H_4	Self-Control → Impulsive Buying	0.098	2.040	0.041	Supported (significant and positive direct effect)
H_5	Self-Control × FOMO → Impulsive Buying	0.246	5.778	0.000	Supported (significant and self-control acts as an enhancing moderator)
H_6	Self-Control × eWOM → Impulsive Buying	0.186	4.532	0.000	Supported (significant and self-control acts as an enhancing moderator)

As shown in Table 10, all seven hypotheses produced statistically significant path coefficients (t-value ≥ 1.96; p < 0.05). Hypotheses H_1, H_2, and H_3 are supported in the hypothesized positive direction, confirming that FOMO, eWOM, and hedonic value each significantly increase impulsive buying. H_4 reveals that self-control has a small but statistically significant positive direct effect on impulsive buying (β=0.098, t=2.040, p=0.041), a counterintuitive finding given that self-control is conventionally expected to reduce impulsive behavior. Furthermore, although statistically significant, H_5, H_6, and H_7 were not supported in the hypothesized (weakening) direction: rather than negatively moderating these relationships as theorized, self-control was found to positively moderate (strengthen) them, acting as an enhancing moderator. This paradoxical pattern, discussed in detail in the following section, forms the central contribution of this study.

The R-squared (R^2) value for the impulsive buying variable of 0.474 indicates that 47.4% of the variance in impulsive buying behavior can be explained by eWOM, FOMO, hedonic value, self-control, and the three moderating interaction effects in the research model. The remaining 52.6% is explained by factors outside the research model. Next, Figure 3 displays a diagram of the structural model based on the t-statistic values obtained through the bootstrapping process. The t-statistic values are used to determine the level of significance of each relationship between constructs in the research model.

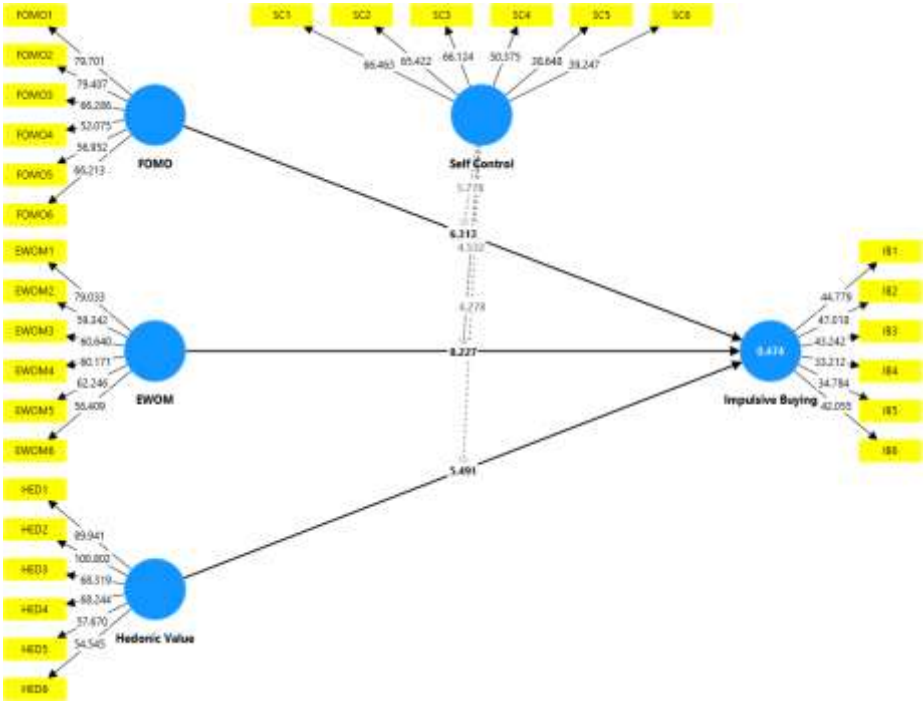

Figure 3. PLS-SEM structural model diagram (t-statistics)

A multicollinearity test was conducted to ensure that there was no excessive correlation between the predictor variables in the research model. The VIF value must be below 5.00 for the model to be declared free of multicollinearity.

Table 11. Multicollinearity test results

Track	VIF value	Criteria	Information
eWOM → Impulsive Buying	1.144	< 5.00	No Multicollinearity
FOMO → Impulsive Buying	1.076	< 5.00	No Multicollinearity
Hedonic Value → Impulsive Buying	1.075	< 5.00	No Multicollinearity
Self-Control → Impulsive Buying	1.047	< 5.00	No Multicollinearity
Self-Control × Hedonic Value → IB	1.175	< 5.00	No Multicollinearity
Self-Control × eWOM → IB	1.229	< 5.00	No Multicollinearity
Self-Control × FOMO → IB	1.123	< 5.00	No Multicollinearity

Based on the test results in Table 11, all predictor variables have VIF values ranging from 1.047 to 1.229. The highest value was found in the self-control × eWOM → impulsive buying path (1.229), while the lowest value was found in the self-control → impulsive buying path (1.047). All of these values are well below the maximum limit of 5.00. These results indicate that there are no multicollinearity issues in the proposed research model. Therefore, the relationships between the independent and moderating variables do not interfere excessively with each other, and the resulting path coefficient estimates can be considered stable, accurate, and suitable for hypothesis testing. The coefficient of determination (R^2) was used to measure the ability of the independent and moderating variables to explain the variance of the dependent variable. The higher the R^2 value, the better the predictive ability of the model.

Table 12. Results of the determination coefficient test (r square)

Dependent Variable	R Square	R Square Adjusted	Interpretation
Impulsive Buying	0.474	0.464	Moderate

Based on the test results in Table 12, the impulsive buying variable has an R-squared value of 0.474 and an adjusted R-squared value of 0.464. These values indicate that 47.4% of the variation in impulsive buying behaviour among Generation Z blind box buyers in Bandung City can be explained by the variables eWOM, FOMO, Hedonic Value, Self-Control, and the moderating interaction between self-control and the three independent variables. Meanwhile, the remaining 52.6% is influenced by other variables outside the research model that were not analyzed in this study, such as price discounts, scarcity promotions, platform algorithm personalization, social identity and peer influence. An R^2 value of 0.474 is considered moderate and indicates that the model has sufficient explanatory power to explain impulsive buying behavior in the context of this study.

The adjusted R-squared value of 0.464 also indicates that the model retains stable explanatory power after considering the number of predictor variables used. Thus, the research model is deemed to have sufficient empirical relevance for further analysis. An effect size (f^2) test was conducted to determine the relative contribution of each predictor variable to the dependent variable. Where an f^2 value ≥ 0.02 is categorized as weak, ≥ 0.15 as moderate, and ≥ 0.35 as strong.

Table 13. Effect size test results (f-square)

Track	f^2 value	Interpretation
eWOM → Impulsive Buying	0.173	Moderate
FOMO → Impulsive Buying	0.127	Weak–Moderate
Hedonic Value → Impulsive Buying	0.094	Weak
Self-Control → Impulsive Buying	0.017	Very weak
Self-Control × Hedonic Value → IB	0.056	Weak
Self-Control × eWOM → IB	0.063	Weak
Self-Control × FOMO → IB	0.110	Weak–Moderate

Based on the test results in Table 13, eWOM has the largest effect size on impulsive buying, with an f^2 value of 0.173, which is considered moderate. This indicates that eWOM is the most dominant variable in explaining changes in impulsive buying behavior among Generation Z TikTok users in this study. The FOMO variable had an f^2 value of 0.127, which was in the weak-to-moderate category. This finding indicates that the fear of missing out significantly contributes to impulsive purchases of blind box products. The hedonic value variable had an f^2 value of 0.094, which was in the weak category but still contributed significantly to impulsive buying behavior.

However, the direct effect of self-control on impulsive buying had an f^2 value of 0.017, which was categorized as very weak. The direct effect size of self-control (f^2=0.017) fell below the recommended threshold of 0.02 and could therefore be interpreted as negligible. However, its moderating effects remain significant in explaining variations in impulsive buying behavior. The moderating effect of self-control on the relationship between FOMO and Impulsive Buying has an f^2 value of 0.110, while the moderating effects on the relationships between eWOM and impulsive

buying and hedonic value and impulsive buying are 0.063 and 0.056, respectively. These results indicate that the main role of self-control in this study is more prominent as a moderating variable than as a direct predictor of impulsive buying. Predictive relevance testing was performed using the Q^2 value to determine the model's predictive ability for endogenous variables. A model is said to have good predictive relevance if the Q^2 value is greater than zero.

Table 14. Predictive relevance test results (Q-square)

Variable	Q^2 Predict	Criteria	Information
Impulsive Buying	0.441	> 0.00	Good Predictive elevance

Based on the test results in Table 14, the impulsive buying variable had a Q^2 value of 0.441. This value is well above zero, indicating that the research model has a good predictive ability. The relatively close Q^2 value to the R^2 value also indicates that the model is not only able to theoretically explain the relationship between variables but also has sufficient ability to predict impulsive buying behavior in a context similar to this study's. Thus, the research model is considered to have a strong predictive relevance. Model fit evaluation was conducted to determine the level of agreement between the research model and empirical data used. In this study, the model fit evaluation used the Standardized Root Mean Square Residual (SRMR) and Normed Fit Index (NFI) indicators.

Table 15. Model Fit Evaluation Results

Index	Saturated Model	Estimated Model	Criteria	Information
SRMR	0.037	0.037	< 0.08	Fit Model
d_ULS	0.636	0.622	-	-
d_G	0.301	0.298	-	-
Chi-square	681,124	671,587	-	-
NFI	0.928	0.929	≥ 0.90	Fit Model

Based on the test results in Table 15, the SRMR value for the estimated model was 0.037. This value is below the maximum limit of 0.08, indicating that the model residuals are relatively small and that the model has a good level of fit to the empirical data. Furthermore, the NFI value of 0.929 exceeds the minimum threshold of 0.90. This result indicates that the research model has a high level of fit compared with the baseline model (null model). The d_ULS, d_G, and chi-square values also indicate stable results between the saturated model and the estimated model. Overall, the results of the model fit evaluation confirm that the structural model built in this study met the goodness-of-fit criteria and is suitable for use as a basis for testing research hypotheses.

5. CONCLUSIONS

5.1 Conclusion

This study successfully verified that digital stimuli on short video platforms significantly accelerate unplanned purchases. First, the first objective was achieved as FOMO positively and significantly influenced impulsive buying, confirming the role of social anxiety in triggering spontaneous decision-making. Second, TikTok eWOM has the strongest direct effect on impulsive buying, highlighting the dominant role of review content and unboxing videos in shaping consumer behavior. Third, hedonic value significantly influenced impulsive buying, indicating that the pleasure and surprise sensations of blind box products drive spontaneous purchases. Fourth, self-control paradoxically strengthened rather than weakened the relationship between the independent variables and impulsive buying. Higher self-control among Generation Z users confronted with acute peer-driven validation and unboxing trends on TikTok indicates a temporary failure in self-regulation within high-stimulus social commerce environments. This finding challenges the conventional assumption of self-control as a protective factor, suggesting that ego depletion and repeated digital stimuli override cognitive restraint.

5.2 Research Limitations

This study has limitations, as the sample cohort was heavily constrained to Generation Z consumers residing within urban centers in Bandung, Indonesia. This geographical boundary restricts the generalizability of the findings to rural consumers of different age cohorts who may process algorithms and social commerce stimuli differently. Additionally, data gathering relied exclusively on cross-sectional self-reported questionnaires, which might oversimplize the fluid, real-time emotional shifts during actual online purchase journeys. The cross-sectional design also limits causal inference, and the absence of common method bias testing (Harman's single factor) represents an additional constraint on the robustness of the self-reported data. Another limitation relates to self-selection bias because only respondents who had previously purchased Blind Box products were included in this study. In addition, social desirability bias may have occurred because impulsive buying behavior was measured using self-reported questionnaires, which may not fully reflect actual purchasing behavior.

5.3 Suggestions and Directions for Future Research

Future researchers are encouraged to expand the demographic scope by incorporating comparative regional studies across cross-cultural boundaries to check whether local consumer subcultures alter self-control interactions. It is also highly recommended to deploy longitudinal data designs or experimental methodologies to capture actual physiological and behavioral responses during live-streaming shopping cycles. Finally, exploring other moderating variables, such as platform algorithm personalization or digital pocket money allowances, could offer profound insights.

AUTHOR CONTRIBUTIONS

SPN contributed to the conceptualization, methodology, data collection, formal analysis, software application, investigation, visualization, and writing of the original draft of the manuscript. BP contributed to supervision, validation, methodology refinement, data interpretation, project administration, and critical review and editing of the manuscript. Both authors contributed substantially to the development of the study, approved the final version of the manuscript, and agreed to be accountable for all aspects of this work.

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