



Scarcity Message, FOMO, and Social Persuasive Technology on Impulse Buying among Generation Z Fast Fashion Consumers

Putra Pratama^{1*}, Elda Sri Andini², Rino Febrianno Boer³

^{1,2,3} Department of Management, Faculty of Business, LSPR Institute of Communication and Business, Jakarta, Indonesia

Abstract

Introduction/Main Objectives: This study examines the effect of scarcity message, fear of missing out (FOMO), and social persuasive technology on impulse buying behavior among Generation Z consumers in Indonesia's fast fashion industry. As digital natives, Generation Z consumers are highly responsive to marketing stimuli and social interactions in digital environments. **Background Problems:** Despite growing literature on impulse buying behavior, limited studies examine how scarcity message, FOMO, and social persuasive technology jointly influence impulse buying among Generation Z consumers in fast fashion. **Novelty:** This study integrates these variables into a single empirical model to explain impulse buying behavior among Generation Z consumers, addressing limited research examining these factors together. **Research Methods:** This study uses a quantitative survey using data from 211 Generation Z consumers who purchased fast fashion products. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). **Finding/Results:** Results show scarcity message, FOMO, and social persuasive technology have positive and significant effects on impulse buying behavior, with social persuasive technology emerging as the strongest predictor. **Conclusion:** The findings highlight the role of digital-social persuasion in shaping impulse buying among Generation Z and provide theoretical contributions to Marketing 5.0 and implications for fast fashion marketers.

Article Info

Correspondence:

Putra Pratama
(22240030001@lspr.edu)

Article History:

Submitted: 15-08-2025
Revised: 26-09-2025
Accepted: 20-10-2025
Published: 30-10-2025

JEL Classification:

M31; D91; O33

Keyword:

Scarcity Message;
Fear Of Missing Out;
Social Persuasive;
Technology;
Impulse Buying

1. INTRODUCTION



Generation Z is an increasingly dominant cohort in the contemporary consumer landscape, particularly in Indonesia where this generation represents a significant proportion of the population (Badan Pusat Statistik, 2020). As digital natives, Generation Z is highly exposed to technological advancements and digital environments, which shape their preferences, behaviors, and purchasing patterns. This generational shift has significant implications for industries that rely heavily on digital engagement, including the fast fashion sector, which is characterized by rapid product cycles and intensive digital marketing strategies.

In line with the rapid development of digital technology, consumer behavior has undergone substantial transformation. Digital platforms, especially social media, have become primary channels for accessing information, interacting with brands, and making

purchasing decisions. This transformation has led to the emergence of impulse buying behavior, defined as spontaneous and emotionally driven purchasing without prior planning (Rook, 1987; Beatty & Ferrell, 1998). Such behavior is particularly prevalent among Generation Z, who are highly responsive to digital stimuli and social interaction (Abbas et al., 2025).

From a marketing perspective, businesses increasingly utilize psychologically driven strategies to influence consumer decisions. Scarcity message, for instance, emphasizes limited availability or time constraints to create urgency and stimulate immediate action (Sun & Teichert, 2024), a mechanism rooted in Loss Aversion Theory, which posits that individuals are more strongly motivated by the fear of losing an opportunity than by the prospect of gaining equivalent value (Kahneman & Tversky, 1979). Similarly, Fear of Missing Out (FOMO) reflects consumers anxiety about missing valuable experiences, which can accelerate decision-making and influence consumer behavior (Przybylski et al., 2013; Alhawamdeh & Hegner, 2023); this phenomenon aligns with Reactance Theory, which suggests that perceived threats to freedom or access intensify the desire to obtain the restricted object (Brehm, 1966). In addition, social persuasive technology leverages social influence mechanisms such as reviews, recommendations, and real-time interactions to shape consumer attitudes and behavior (Fogg, 2003; Cialdini, 2009), consistent with Persuasive Technology Theory, which holds that technology can systematically alter human behavior without coercion (Fogg, 2003). These constructs are theoretically integrated through Loss Aversion Theory, Reactance Theory, and Persuasive Technology Theory, which explain how scarcity cues, fear of missing out, and persuasive digital mechanisms stimulate impulse buying behavior among Generation Z consumers within the Marketing 5.0 context (Kotler et al., 2021).

Within the Marketing 5.0 perspective, consumer decision-making is influenced by a combination of cognitive, emotional, and digital-social stimuli. In this study, scarcity message functions as a cognitive trigger that creates perceived urgency and limited availability, encouraging consumers to make faster purchasing decisions. Fear of Missing Out (FOMO) represents an emotional trigger that stimulates anxiety about missing valuable opportunities, thereby intensifying impulse responses. Meanwhile, social persuasive technology operates as a digital-social trigger, leveraging social influence mechanisms such as reviews, recommendations, and real-time interactions to shape consumer attitudes and behaviors in digital environments.

Despite the growing body of literature on impulse buying behavior, prior studies tend to examine scarcity message, fear of missing out (FOMO), and social persuasive technology separately, or within limited contexts such as e-commerce or live-streaming platforms. However, limited studies have integrated these psychological and technological factors jointly within a single empirical model, particularly within the context of Generation Z consumers in the fast fashion industry. This gap is especially evident in emerging markets such as Indonesia, where empirical evidence examining the combined influence of these constructs remains limited.

Departing from this gap, this study aims to examine the integrated influence of scarcity message, Fear of Missing Out (FOMO), and social persuasive technology on Impulse buying behavior among Generation Z consumers in Indonesia, employing a quantitative survey approach. The novelty of this study lies in integrating scarcity message, fear of missing out (FOMO), and social persuasive technology into a unified empirical model to explain impulse buying behavior among Generation Z consumers in the fast fashion industry. While prior studies have typically examined these factors separately, this study combines cognitive (scarcity message), emotional (FOMO), and digital-social (social persuasive technology) triggers within the Marketing 5.0 perspective, providing a more comprehensive understanding of impulse buying behavior in digital environments.

This integration extends the application of Loss Aversion Theory, Reactance Theory, and Persuasive Technology Theory within the Marketing 5.0 framework, while also providing empirical evidence from the Indonesian fast fashion context, which remains

relatively underexplored in prior studies. Moreover, this study offers a contextual contribution by focusing on the Indonesian fast fashion industry, which remains underexplored despite its strategic importance in the digital economy. Based on this framework, the study proposes that scarcity messages (H1), FOMO (H2), and social persuasive technology (H3) each positively and significantly influence impulse buying behavior among Generation Z consumers.

Overall, this study provides a more holistic perspective on how cognitive, emotional, and digital-social factors jointly shape impulse buying behavior in contemporary digital marketing environments. To provide a clearer illustration of the relationships among the variables examined in this study, a conceptual framework is developed. The framework depicts the proposed effect of scarcity message, fear of missing out (FOMO), and social persuasive technology on impulse buying behavior among Generation Z consumers.

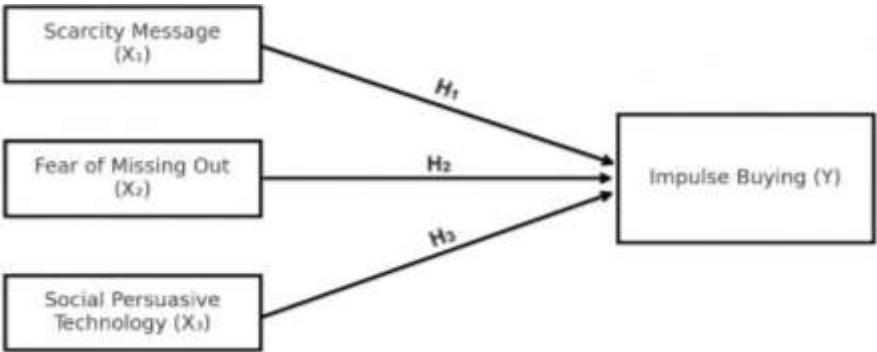


Figure 1. Conceptual Framework
Source: Data Processing Results (2025)

2. METHODS

This study employs an explanatory quantitative approach, examining the causal relationships between scarcity message, Fear of Missing Out (FOMO), and social persuasive technology as independent variables, and Impulse buying behavior as the dependent variable. An explanatory design was selected because the study aims to test directional hypotheses and quantify the strength of influence between variables, rather than merely describing their distribution (Creswell & Creswell, 2018). Data were collected through a structured online questionnaire distributed via Google Forms, using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). This instrument was selected due to its established effectiveness in measuring consumer perceptions and behavioral tendencies in quantitative research (Joshi et al., 2015). Since the data were collected using a self-reported questionnaire at a single point in time, common method bias (CMB) was assessed using full collinearity variance inflation factor (VIF). The results indicate that all VIF values were below the recommended threshold, suggesting that common method bias is unlikely to be a serious concern in this study.

The target population of this study is Generation Z consumers in Indonesia, defined as individuals born between 1997 and 2012, who have prior experience purchasing fast fashion products through either digital platforms or physical retail stores. The analytics unit is the individual consumer. A non-probability purposive sampling technique was applied, as respondents were selected based on their relevance to the research objectives (Campbell et al., 2020). Inclusion criteria required respondents to (1) belong to the Generation Z age cohort, (2) be domiciled in Indonesia, and (3) have made at least one fast fashion purchase.

Sample size was determined following the PLS-SEM "10-times rule" recommended by Hair et al. (2021), which stipulates a minimum sample equal to ten times the number of indicators in the most complex construct. With Scarcity Message containing the largest indicator set (10 indicators), the minimum threshold was 100 respondents. Following

further recommendations for explanatory research involving three independent variables where a range of 150–200 respondents is considered optimal for model stability and predictive strength the study targeted and successfully collected 211 valid responses.

All constructs were measured using multi-item reflective indicators adapted from established literature. Scarcity Message (X1) was operationalized across 10 items capturing two dimensions: limited-time cues (decision restriction and psychological pressure due to time constraints) and limited-quantity cues (decision restriction and psychological pressure due to stock scarcity), adapted from Sun and Teichert (2024) and Kahneman and Tversky (1979). FOMO (X2) was measured using 4 items across two dimensions with social pressure and relatedness concerns, and real-time exposure drawn from Przybylski et al. (2013). Social Persuasive Technology (X3) comprised 8 items measuring social proof, interactive features, and algorithmic influence, grounded in Fogg (2003), Cialdini (2009), and Boer (2021). Impulse Buying (Y) was measured with 6 items capturing spontaneity, emotional and hedonic drive, and digital situational influence, based on Rook (1987), Beatty and Ferrell (1998), and Amos et al. (2014). The complete operationalization is detailed in Table 1 of this study.

Table 1. Operational Variable

Variable Name	Operational Definition	Dimension	Indicator	Statement Item	Source
Scarcity Message (X1)	Promotional messages that emphasize time or quantity limitations to create a purchase urgency.	Limited-Time	Decision restriction	1. I feel that the promo time limits my purchase decision.	Sun & Teichert (2024)
				2. I feel like I have to speed up the decision because the promo has a time limit.	
			Psychological pressure	1. I'm worried about losing the opportunity when the promo is about to end.	Brehm (1966)
				2. I feel a loss if I miss the promo that will end soon.	
		Limited-Quantity	Decision restriction due to stock	1. I feel like I have to buy it before the opportunity is gone.	Sun & Teichert (2024), Brehm (1966)
				2. I feel pressured to buy immediately when the promo is about to end.	
				1. Limited stock information makes me want to buy immediately.	Kahneman & Tversky (1979)
				2. I'm afraid of running out of products when I see a small stock.	

			Psychological pressure due to stock	1. I feel depressed when the product is running out. 2. I feel anxious when I see the number of product stocks listed is getting thinner.	Kahneman & Tversky (1979)
FOMO (X2)	Feeling anxious because of fear of falling behind the experience, opportunity, or trend experienced by others.	Social Pressure & Relatedness	Concern about falling behind the trend	1. I feel anxious if I don't follow the popular trend. 2. I'm afraid to miss the experience that other people have.	Przybylski et al., (2013)
			Pressure to stay connected	1. I feel the need to buy to keep up with social trends. 2. I was encouraged to buy so as not to be left behind by my friends.	Przybylski et al., (2013)
		Social Stimulus Response	Emotional response to digital social stimulus	1. Seeing reviews and high purchases makes me want to buy quickly. 2. I feel emotionally encouraged to buy when I see other people's positive response to a product on social media.	Zhang et al. (2023), Celik et al. (2019)
		Real-Time Exposure	The influence of real-time activity	1. Seeing other people buying in real-time made me encouraged to buy too. 2. Seeing other people buy products in real-time makes me feel like I don't want to be left behind in the trend to buy along.	Resty et al. (2026), Good & Hyman (2021)
Social Persuasive Technology (X3)	Technology-based social influence through social	Social Proof	Social validation	1. I am more confident to buy when I see many positive reviews.	Fogg (2003), Boer (2021)

	proof, digital interaction, and algorithmic recommendations that affect purchasing decisions.			2. The number of likes/buyers increases my trust in the product.	
		Interactive Features	Engagement through interactive features	1. The live chat/interaction feature makes me more interested in buying. 2. Interactive features make the shopping experience more convincing.	Fogg (2003), Kinsky and Rombe (2025)
		Algorithmic Influence	Notification and recommendation	1. The promo notification makes me want to buy. 2. App recommendations affect my purchasing decisions.	Fogg (2003)
Impulse Buying (Y)	Purchases that occur spontaneously, without a plan, and are triggered by emotional impulses.	Spontaneity	Spontaneous impulse	1. I often feel a sudden urge to buy products. 2. I bought the product without considering it first.	Rook (1987)
		Emotional & Hedonic Drive	Emotional satisfaction	1. I feel happy when I buy something spontaneously. 2. Spontaneous purchases make me satisfied.	Beatty & Ferrell (1998), Amos et al. (2014)
		Digital Situational Influence	Get carried away by the digital atmosphere	1. I get carried away easily when shopping online. 2. The digital environment encourages me to buy spontaneously.	Rayburn et al. (2022)

Source: Development by Reseacher (2025)

Data Analysis

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4, selected for its suitability with predictive, reflective-indicator models and its robustness in smaller-to-moderate sample sizes (Hair et al., 2021). The analysis proceeded in two stages. The measurement model (outer model) was assessed for convergent validity through outer loadings (≥ 0.70) and Average Variance Extracted (AVE $\geq$

0.50), and for discriminant validity through the Heterotrait–Monotrait Ratio (HTMT $\leq$ 0.85), the Fornell–Larcker criterion, and cross-loading patterns. Internal consistency reliability was evaluated using Cronbach's Alpha and Composite Reliability (both $\geq$ 0.70). The structural model (inner model) was then assessed through path coefficients and bootstrapping (t-statistic $>$ 1.96; $p <$ 0.05), the coefficient of determination (R^2), predictive relevance (Q^2), and effect size (f^2) following guidelines by Hair et al. (2021).

3. RESULTS AND DISCUSSION

3.1. Results

This research was conducted through the distribution of questionnaires to analyze the effect of Scarcity Message, Fear of Missing Out (FOMO), and Social Persuasive Technology on Impulse Buying on Fast fashion consumers of Generation Z. The questionnaire was distributed to respondents who are included in the Generation Z category in Indonesia who have purchased fast fashion products online or offline.

At the table 2 show that, it was successful to collect 211 respondents through a questionnaire consisting of 31 statement items. Based on the data obtained, the characteristics of the respondents who participated in this study varied and will be further explained through several categories of respondent profiles in the following section.

Table 2. Profile of Respondents

Characteristic	Category	Total Frequency	Percentage (%)	Male	Female	Online	Offline Store
Gender	Male	82	38.86%	-	-	-	-
	Female	129	61.14%	-	-	-	-
Age	18 - 20 Years Old	35	16.59%	-	-	21	14
	21 - 24 Years Old	115	54.50%	-	-	79	36
	25 - 28 Years Old	61	28.91%	-	-	41	20
	29 - 32 Years Old	10	4.80%	-	-	6	4
Profession	University Student	83	39.34%	33	50	58	25
	Private-Sector Employee	76	35.07%	33	43	47	29
	Entrepreneur	32	14.69%	9	23	21	11
	Civil Servant	17	7.58%	5	12	13	4
	Not yet employed	3	3.32%	2	1	2	1
Purchase Channels	Online	141	66.82%	46	95	-	-
	Offline Store	70	33.18%	36	34	-	-

Source: Data Processed (2025)

The general rule that is often used to assess convergent validity is that the load factor value must be more than 0.7 for confirmative research, and the load factor value between 0.6 to 0.7 for explanatory research is considered acceptable. In addition, the average value of the extracted variance (AVE) must be greater than 0.5 (Ghozali, 2015).

Table 3. Outer Loadings

Variable	Indicators	Outer loadings
Scarcity Message	X1.1	0.735
	X1.2	0.743
	X1.3	0.786
	X1.4	0.802
	X1.5	0.769
	X1.6	0.748
	X1.7	0.757
	X1.8	0.764
	X1.9	0.777
	X1.10	0.741
Fear of Missing Out	X2.1	0.852
	X2.2	0.777
	X2.3	0.717
	X2.4	0.878
Social Persuasive Technology	X3.1	0.753
	X3.2	0.770
	X3.3	0.787
	X3.4	0.773
	X3.5	0.820
	X3.6	0.759
	X3.7	0.772
	X3.8	0.810
Impulse Buying	Y.1	0.835
	Y.2	0.860
	Y.3	0.877
	Y.4	0.849
	Y.5	0.863
	Y.6	0.873

Source: Data Processed (2025)

The results of the outer loading test at the table 3 show that all indicators in the constructs of Scarcity Message, Fear of Missing Out, Social Persuasive Technology, and Impulse Buying have a loading value above the minimum limit of 0.70, with a range of values between 0.717 to 0.878. The Scarcity Message Indicator (X1.1–X1.10) has an Outer Loading value of 0.735–0.802, the Fear of Missing Out (X2.1–X2.4) indicator of 0.717–0.878, the Social Persuasive Technology indicator (X3.1–X3.8) of 0.753–0.820, and the Impulse Buying indicator (Y.1–Y.6) of 0.835–0.877. This result confirms that all indicators are able to reflect the latent construct strongly and consistently, so that the validity of the indicators in the measurement model is declared to be fulfilled.

Table 4. Average Variance Extracted (AVE)

Construct	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Scarcity Message (X1)	0.921	0.930	0.933	0.581
Fear of Missing Out (X2)	0.827	0.884	0.882	0.654
Social Persuasive Technology (X3)	0.909	0.912	0.926	0.610
Impulse Buying (Y)	0.929	0.932	0.944	0.739

Source: Data Processed (2025)

Table 4 show the reliability test results indicate that all constructs have Cronbach's Alpha and Composite Reliability (ρ_a) values exceeding the minimum threshold of 0.70. Cronbach's Alpha values were recorded at 0.921 for Scarcity Message, 0.827 for Fear of Missing Out, 0.909 for Social Persuasive Technology, and 0.929 for Impulse Buying, while the Composite Reliability values were 0.930, 0.884, 0.912, and 0.932, respectively. These values indicate a very high level of internal consistency and excellent measurement stability, so all constructs were deemed reliable. The Average Variance Extracted (AVE) values for all constructs exceeded the 0.50 threshold, specifically 0.581 for Scarcity Message, 0.653 for Fear of Missing Out, 0.610 for Social Persuasive Technology, and 0.739 for Impulse Buying. These values indicate that each construct is capable of explaining more than 50% of its indicator's variance, meaning the constructs possess excellent representational capacity for their indicators and convergent validity has been optimally met.

Table 5. Collinearity Statistics VIF

Variable	Indicators	VIF
Scarcity Message	X1.1	1.893
	X1.2	2.137
	X1.3	2.444
	X1.4	2.463
	X1.5	2.701
	X1.6	2.504
	X1.7	2.504
	X1.8	2.307
	X1.9	2.159
	X1.10	2.215
Fear of Missing Out	X2.1	2.140
	X2.2	2.007
	X2.3	1.696
	X2.4	2.307
Social Persuasive Technology	X3.1	2.056
	X3.2	2.094
	X3.3	2.095
	X3.4	2.026
	X3.5	2.438
	X3.6	2.176
	X3.7	2.114
	X3.8	2.582
Impulse Buying	Y.1	2.506
	Y.2	2.862
	Y.3	3.039
	Y.4	2.635
	Y.5	2.885
	Y.6	3.106

Source: Data Processed (2025)

The full collinearity variance inflation factor (VIF) was evaluated to assess potential common method bias (CMB), following the approach suggested by Kock (2015) (Table 5). The results indicate that all VIF values range between 1.696 and 3.039, which are below the conservative threshold of 3.3. Therefore, it can be concluded that common method bias is unlikely to pose a serious threat to the validity of the findings.

Table 6. Path Coefficients

Variables	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P Values
X1 -> Y	0.399	0.402	0.055	7.284	0.000
X2 -> Y	0.122	0.127	0.055	2.200	0.028
X3 -> Y	0.445	0.448	0.048	9.324	0.000

Source: Data Processed (2025)

Table 6 show that the results of the bootstrapping analysis, all independent variables have a significant positive effect on Impulse buying. For Scarcity Message (X1) coefficient 0.399; statistically-t 7.284; value-p 0.000, it is concluded that it has a significant effect. For the Fear of Missing Out (X2) variable, the coefficient is 0.122; statistically-t 2.200; value-p 0.028, also shows a significant influence. For the Social Persuasive Technology (X3) variable, it has the highest coefficient value, which is 0.445; statistically-t 9.324; p-value 0.000, making it the most dominant variable that affects Impulse buying behavior.

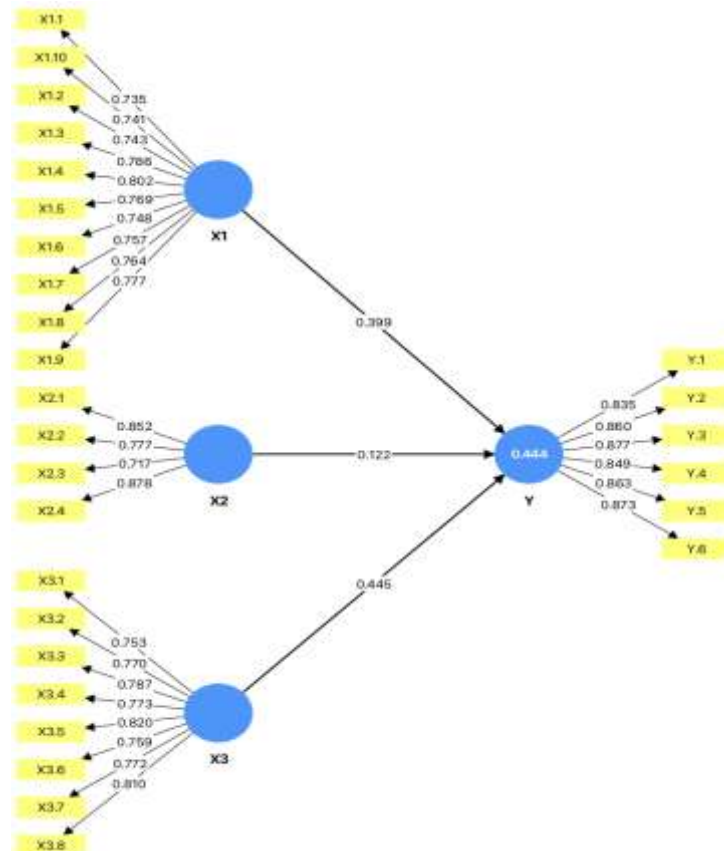


Figure 2. PLS-SEM Structure Model Result
Source: Data Processed (2025)

Figure 2 illustrates the structural relationships between scarcity message (X1), fear of missing out (FOMO) (X2), and social persuasive technology (X3) on impulse buying (Y). All independent variables show positive relationships with impulse buying, indicating that increases in these variables are associated with higher levels of impulse buying behavior. The model demonstrates a moderate level of explanatory power, suggesting that the combination of these variables provides a meaningful explanation of impulse buying behavior in the fast fashion context.

The results of the Heterotrait–Monotrait Ratio (HTMT) (Table 7) test show that all HTMT values between constructs are below the maximum limit of 0.85. The highest HTMT value was found in the relationship between the Impulse Buying variable and Social

Persuasive Technology of 0.530, followed by the relationship between Impulse Buying and Scarcity Message of 0.479. Meanwhile, other relationships are at a lower value. This result confirms that there is a clear conceptual separation between constructs and the absence of construct overlap problems in the research model.

Table 7. HTMT Ratio

Variables	Scarcity Message	Fear of Missing Out	Social Persuasive Technology	Impulse Buying
Scarcity Message				
Fear of Missing Out	0.300			
Social Persuasive Technology	0.119	0.180		
Impulse Buying	0.479	0.316	0.530	

Source: Data Processed (2025)

Table 8. Fornell–Larcker Criterion

Variables	Scarcity Message	Fear of Missing Out	Social Persuasive Technology	Impulse Buying
Scarcity Message	0.762			
Fear of Missing Out	0.255	0.809		
Social Persuasive Technology	0.082	0.159	0.781	
Impulse Buying	0.467	0.295	0.497	0.860

Source: Data Processed (2025)

Table 8 show that Based on the Fornell–Larcker criteria, the square root value of the AVE of each construct is higher compared to the correlation value for other constructs, which is 0.762 for Scarcity Message, 0.809 for Fear of Missing Out, 0.781 for Social Persuasive Technology, and 0.860 for Impulse Buying. This condition shows that each construct has a strong discrimination power and is able to explain its own indicators better than other constructs.

Table 9. Cross Loading

Variables	Scarcity Message	Fear of Missing Out	Social Persuasive Technology	Impulse Buying
X1.1	0.735	0.115	0.046	0.436
X1.2	0.743	0.196	-0.037	0.284
X1.3	0.786	0.191	0.063	0.431
X1.4	0.802	0.179	0.147	0.448
X1.5	0.769	0.186	0.034	0.266
X1.6	0.748	0.167	-0.037	0.215
X1.7	0.757	0.202	0.035	0.323
X1.8	0.764	0.263	0.094	0.296
X1.9	0.777	0.211	0.095	0.368
X1.10	0.741	0.267	0.107	0.334
X2.1	0.178	0.852	0.145	0.240
X2.2	0.193	0.777	0.050	0.152
X2.3	0.252	0.717	0.174	0.193
X2.4	0.214	0.878	0.132	0.316
X3.1	0.021	0.135	0.753	0.271
X3.2	0.046	0.066	0.770	0.389
X3.3	-0.004	0.160	0.787	0.386
X3.4	0.064	0.065	0.773	0.382
X3.5	0.090	0.155	0.820	0.419
X3.6	0.089	0.128	0.759	0.373
X3.7	0.091	0.118	0.772	0.444
X3.8	0.098	0.170	0.810	0.397

Y.1	0.431	0.282	0.364	0.835
Y.2	0.341	0.235	0.444	0.860
Y.3	0.453	0.276	0.482	0.877
Y.4	0.400	0.246	0.464	0.849
Y.5	0.392	0.204	0.423	0.863
Y.6	0.381	0.276	0.373	0.873

Source: Data Processed (2025)

The results of the cross loading test at table 9 show that each indicator has the highest loading value on the construct it measures compared to other constructs. All indicators of Scarcity Message, Fear of Missing Out, Social Persuasive Technology, and Impulse Buying show consistent and dominant loading patterns in their respective constructs, so that there is no indication of cross-measurement errors in the measurement model.

The R-square value for the Impulse Buying variable at the table 10 show that is 0.444, indicating that Scarcity Message, Fear of Missing Out (FOMO), and Social Persuasive Technology are able to explain 44.4% of the variance in Impulse Buying. The remaining 55.6% is influenced by other variables not included in this study. Furthermore, the adjusted R-square value of 0.435 confirms that the model has moderate explanatory power.

Table 10. Results of R-Square

Variables	R-Square	Conclusion
Impulse Buying	0.444	Moderate

Source: Data Processed (2025)

Table 11. Results of f-Square

Variables	f-square	Interpretation
X1 -> Y	0.267	Medium
X2 -> Y	0.024	Small
X3 -> Y	0.346	Medium

Source: Data Processed (2025)

Table 11 show that the effect size (f^2) was evaluated to assess the contribution of each exogenous variable to the endogenous construct. The results show that scarcity message has a medium effect on impulse buying ($f^2 = 0.267$), while fear of missing out (FOMO) has a small effect ($f^2 = 0.024$). Social persuasive technology demonstrates the strongest effect, with an f^2 value of 0.346, indicating a moderate to large effect size. These findings suggest that social persuasive technology contributes most substantially to explaining variations in impulse buying behavior.

Table 12. Results of Q-Square

Variables	SSO	SSE	$Q^2 (=1-SSE/SSO)$
X1	2110.000	2110.000	0.000
X2	844.000	844.000	0.000
X3	1688.000	1688.000	0.000
Y	1266.000	868.699	0.314

Source: Data Processed (2025)

The R-square value of 0.444 indicates that scarcity message, fear of missing out (FOMO), and social persuasive technology explain 44.4% of the variance in impulse buying, while the adjusted R-square of 0.435 confirms moderate explanatory power (Table 12). In addition, the Q-square value of 0.314 from the blindfolding procedure indicates that the model has predictive relevance, as the value is above zero. This means the structural model is adequate in both explanation and prediction.

3.2. Discussion

The Positive Effect of Scarcity Message on Impulse Buying

The results indicate that scarcity messages have a positive and significant effect on impulse buying ($\beta = 0.399$, $t = 7.284$, $p < 0.001$). This suggests that marketing strategies emphasizing limited time and product availability are effective in creating a sense of urgency among consumers. As a result, consumers are encouraged to make quicker purchasing decisions without extensive consideration. This finding is consistent with Sun and Teichert (2024), who argue that scarcity-based messages increase psychological pressure and trigger impulse buying behavior. In the context of Generation Z fast fashion consumers, scarcity cues such as “limited stock” or “limited-time offers” play a crucial role in accelerating purchase decisions. This finding reflects the mechanism proposed in Loss Aversion Theory, where consumers are more motivated to avoid potential losses than to pursue equivalent gains, making scarcity cues particularly effective in stimulating impulse buying behavior. This phenomenon is especially relevant in Indonesia, where fast fashion promotions are widely disseminated through social media and e-commerce flash sales. Such marketing practices reinforce the perception of scarcity and encourage Generation Z consumers to make faster purchasing decisions.

The Positive Effect of Fear of Missing Out (FOMO) on Impulse Buying

Fear of Missing Out (FOMO) was also found to have a positive and significant influence on impulse buying ($\beta = 0.122$, $t = 2.200$, $p = 0.028$). This indicates that emotional responses driven by the fear of missing trends, experiences, or opportunities strongly affect consumer behavior. Generation Z, as a highly socially connected group, tends to be more sensitive to social comparison and real-time digital interactions. This finding aligns with Przybylski et al. (2013) and Alhawamdeh and Hegner (2023), who explain that FOMO represents a psychological reaction to social pressure that can accelerate decision-making and lead to spontaneous purchases. This finding highlights the role of emotional triggers in impulse buying behavior. Emotional pressure derived from social comparison may reduce consumers' deliberation processes and encourage faster purchase decisions. Generation Z consumers are highly exposed to social media trends, peer activities, and influencer recommendations, which increase psychological pressure to keep up with others and stimulate impulse buying decisions.

The Positive Effect of Social Persuasive Technology on Impulse Buying

The findings reveal that social persuasive technology has the most dominant influence on impulse buying ($\beta = 0.445$, $t = 9.324$, $p < 0.001$). This demonstrates that digital social interactions such as user reviews, number of likes, comments, and algorithm-driven recommendations significantly shape consumer trust and purchasing decisions. These elements act as social proof, indicating that digital social interaction plays a dominant role in shaping purchasing behavior among Generation Z. Continuous exposure to reviews, ratings, and algorithm-based recommendations strengthens consumer trust, reinforces confidence, and reduces hesitation in making purchase decisions. As a result, such mechanisms encourage impulse buying behavior among young consumers who are highly active on social media platforms. This finding supports Persuasive Technology Theory (Fogg, 2003), which explains that digital technologies can be designed to influence attitudes and behaviors through persuasive mechanisms embedded in interactive systems.

The Effect of Scarcity Message, FOMO, and Social Persuasive Technology within the Integrated Model

The results further show that all independent variables, scarcity message, fear of missing out (FOMO), and social persuasive technology have a positive and significant effect on impulse buying when modeled together. This finding highlights that impulse buying behavior is not driven by a single factor, but rather by the combined influence of psychological triggers and digital social dynamics. This is in line with the concept of

Marketing 5.0: Technology for Humanity (Kotler et al., 2021), which emphasizes the integration of advanced technologies and human-centered insights to influence consumer behavior more effectively in the digital era.

The Dominant Role of Social Persuasive Technology in Impulse Buying

Among the three variables, social persuasive technology was found to be the most dominant factor influencing impulse buying. This indicates that social interaction and validation within digital platforms play a more significant role in influencing impulse buying compared to scarcity and emotional triggers alone. For Generation Z consumers, purchasing decisions are highly influenced by peer behavior, online engagement, and digital recommendations. This indicates that digital social environments amplify persuasive influence by combining informational cues and social validation, which can significantly strengthen consumers' confidence when making spontaneous purchasing decisions.

This finding is consistent with Nguyen et al. (2026), who highlight that social persuasive technology enhances Impulse buying behavior through social validation and real-time interaction in digital environments. In addition, this result is supported by Social Influence Theory (Kinsky and Rombe, 2025), which explains that individuals tend to rely on social proof such as reviews, likes, and recommendations when making decisions under uncertainty. Therefore, the dominance of social persuasive technology reflects the strong impact of digital social environments on shaping consumer behavior, particularly among Generation Z who are highly engaged with social media platforms.

4. CONCLUSION

The purpose of this research is to examine the scarcity message's effect on impulse buying in Generation Z fast fashion consumers. The results of this analysis were carried out using Partial Least Squares Structural Equation Modeling (PLS-SEM) with 211 Generation Z respondents who had purchased fast fashion products. Research results show that scarcity messages have a positive impact on impulse buying. This situation will encourage consumers to make purchasing decisions without a long consideration process that leads to a higher tendency for impulse buying behavior.

Another aspect identified in this study is that Fear of Missing Out (FOMO) also triggers impulse buying behavior among most fast fashion consumers from Generation Z. The feeling of being left behind from trends or opportunities enjoyed by others is one of the psychological factors that can affect the decision to buy. Exposure to social activities on digital media, such as the number of purchases, comments, and growing trends on social media, can strengthen the emotional drive to make impulse buying behavior.

In addition, research findings show that social persuasive technology has a positive effect on impulse buying behavior among Generation Z fast fashion consumers. The technological aspect of social proof such as user reviews and the number of likes, comments, and interactive features on digital platforms makes consumers believe in the product and therefore encourages them to immediately buy the product without planning.

In general, this study shows that Scarcity Message, Fear of Missing Out, and Social Persuasive Technology have significant effects on Impulse buying behavior when modeled together within the structural model. These three variables reinforce each other to trigger psychological impulses that change consumer buying behavior. These variables contribute independently to shaping consumer behavior, while collectively enhancing the explanatory power of the model. The effects of perceived urgency due to time-limited offers, social pressure through digital word-of-mouth, and persuasive technology mechanisms increase consumer readiness to make impulse buying decisions.

In addition, research results show that social persuasive technology is the most dominant factor that affects Impulse buying. This implies that in the context of contemporary digital marketing, technology mediated social influences play a role in the

consumption behavior of Generation Z. This highlights the fact that digital social interactions such as user reviews, algorithm suggestions, and real-time activities on digital platforms are big factors that influence consumers to make Impulse buying behavior.

This research supports the finding that the combination of Scarcity Message, Fear of Missing Out, and Social Persuasive Technology affects the Impulse buying behavior of Generation Z consumers in the fast fashion industry. This study also strengthens the concept of Marketing 5.0: Technology for Humanity, by integrating the role of digital technology and understanding of human behavior into a marketing approach, in order to develop a more effective, human-oriented, and responsive marketing strategy for growing digital consumers.

This study contributes to the literature on consumer behavior and persuasive technology by demonstrating that social persuasive technology plays a dominant role in influencing impulse buying behavior among Generation Z consumers in the fast fashion context. From a managerial perspective, these findings suggest that fast fashion marketers should prioritize digital social engagement strategies, such as enhancing review visibility, recommendation algorithms, and interactive social features, to effectively stimulate impulse buying behavior among Generation Z consumers.

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