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Scarcity, FOMO, and impulse buying among NCT merchandise consumers

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Abstract

The K-pop phenomenon in Indonesia has created a unique consumption pattern: impulsive purchases of official merchandise by highly emotionally invested fans. This study analyzes impulse buying among Indonesian fans of the K-pop boy group NCT (NCTzen) by examining FOMO as a mediator between perceived scarcity and impulse buying, and the Bandwagon Effect as a moderator, within the Stimulus-Organism-Response (S-O-R) framework. Using data from 236 active NCT fans collected through purposive and snowball sampling, this quantitative study employed PLS-SEM analysis. Results show that perceived scarcity significantly affects FOMO, and FOMO significantly drives impulse buying, while the direct effect of scarcity on impulse buying is insignificant—confirming FOMO as a full mediator. The Bandwagon Effect strengthens the effect of scarcity on impulse buying. These findings suggest that product scarcity drives impulse buying when it triggers social anxiety about being left behind, rather than merely signaling limited stock, with FOMO as the dominant psychological factor. This study enriches the S-O-R framework in digital fandom contexts and offers practical implications for K-pop merchandise marketers, suggesting they combine scarcity cues with social elements that trigger FOMO and make fans' collective behavior visible.

keywords: *bandwagon effect, fear of missing out (FOMO), impulse buying, perceived scarcity, S-O-R theory.*

Introduction

Korean Pop Culture (K-Pop) has developed into a global phenomenon that influences the entertainment industry, lifestyles, and consumer behavior across countries. In Indonesia, enthusiasm for K-Pop has shown exponential growth; in 2024, Indonesia was recorded as the world's third-largest K-Pop market, with a 22% growth in listenership according to Spotify Wrapped 2024 (Spotify Newsroom, 2024). This growth is reflected not only in digital music consumption but also in intense fandom activity, including the purchase of official merchandise that frequently sells out within minutes, indicating fans' high emotional engagement with their idols (Pratiwi, 2023).

This popularity is specifically reflected in groups such as NCT, which command a large fan base. NCTzen, as NCT fans are known, display a distinctive consumption pattern, particularly in the purchase of limited merchandise such as photocards, special edition albums, and yearbook photocards (Lee, 2023; Ardhiyansyah et al., 2021). Photocards, in particular, have become a high-value commodity that fuels intense competition among fans and drives multiplied prices in the secondary market. Merchandise scarcity, triggered by limited product quantity and time, encourages impulse buying spontaneous purchases made without prior planning (Arianty et al., 2024). In this context, scarcity is not only objective but also subjectively perceived through marketing cues such as "limited edition" labels or countdown timers.

Prior studies show that perceived scarcity significantly influences consumers' product

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evaluations and purchase decisions (Zhang et al., 2022). Scarcity adds psychological value to a product and triggers a distinct emotional response known as Fear of Missing Out (FOMO) anxiety over missing an opportunity that others are enjoying. In the context of K-Pop merchandise, FOMO arises when fans see other community members owning exclusive items, or realize that the opportunity to obtain merchandise is highly limited. Research indicates that FOMO has a significant positive relationship with impulse buying, particularly in trends driven by celebrities and popular culture (Chen et al., 2022; Mahmud et al., 2023). This phenomenon is intensified by marketing strategies that create urgency and exclusivity, shaping consumer perceptions to encourage rapid purchasing (Ardyan & Sanapang, 2023).

Beyond FOMO, impulse buying is also shaped by the bandwagon effect individuals' tendency to follow the behavior of others within their group (Kang & Ma, 2020). This effect is amplified by the high visibility of purchasing activity on social media, where fans actively share unboxing videos or photocard collections as a form of participation and identity affirmation within the fandom community. Such visibility generates demand scarcity, i.e., scarcity arising from high demand among other consumers (Zhang et al., 2022). When fans observe that a particular item is highly sought after by fellow NCTzen, their perception of scarcity intensifies, which can, in turn, strengthen FOMO and drive impulse buying. However, the intensity of the bandwagon effect is not uniform across individuals, as it depends on one's need for belongingness and sensitivity to social norms within the fandom group. This dynamic distinguishes consumption patterns in fan communities from those of consumers in general, since emotional attachment to idols and the community shapes how fans interpret and respond to social pressure to buy.

To explain this complex mechanism, the present study draws on the Stimulus-Organism-Response (S-O-R) framework, in which perceived scarcity functions as the stimulus, FOMO as the internal organism variable, and impulse buying as the response (Zhang et al., 2022). Prior research has confirmed the relationship among perceived scarcity, FOMO, and impulse buying (Zhang et al., 2022; Mahmud et al., 2023), as well as the role of the bandwagon effect in shaping collective consumption behavior (Kang & Ma, 2020). However, these studies generally treat the bandwagon effect as a standalone variable and examine it in general product or online-shopping contexts, rather than among consumer groups with intense emotional attachment and social dynamics such as fan communities (Abdrabbo et al., 2025). This gap is important to address, because within fan communities, social pressure to follow fellow members' behavior (bandwagon) and the fear of being left behind (FOMO) are unlikely to operate independently; instead, they likely reinforce one another through a shared sense of belongingness and collective identity as NCTzen. If these two mechanisms continue to be treated as separate, standalone variables, the resulting explanation risks overlooking the collective and emotional character that distinguishes K-Pop merchandise purchasing from impulse buying of consumer products in general.

The novelty of this study lies in positioning the bandwagon effect as a moderating variable rather than merely a standalone predictor in the relationship between FOMO and impulse buying within the S-O-R framework, a form of interaction that has not been widely tested in prior research. By focusing on the NCTzen community as its research context, this study also offers a more specific contribution than previous research by elucidating how distinctive characteristics of K-Pop fandom such as high idol loyalty, a culture of sharing on social media, and the limited, randomized nature of merchandise like photocards interact to shape a distinctive pattern of impulse buying within this community.

This study aims to test a comprehensive theoretical model that simultaneously investigates the mediating role of FOMO and the moderating role of the bandwagon effect in the relationship between perceived scarcity and impulse buying, specifically among NCT merchandise consumers in Indonesia. Its theoretical contribution lies in integrating psychological (FOMO) and social (bandwagon effect) mechanisms into a single, coherent model using the S-O-R framework, thereby enriching our understanding of consumer behavior within the context of fandom and popular culture. Practically, the findings are expected to provide guidance for marketers and e-commerce platforms in designing more effective marketing strategies, as well as to raise consumer awareness of the factors that influence their impulse-buying decisions.

This study is grounded in the Stimulus-Organism-Response (S-O-R) Theory, which posits that an external stimulus is processed by the organism encompassing cognitive and affective factors before producing a behavioral response (Mehrabian & Russell, 1974). In this context, perceived scarcity functions as the stimulus that creates urgency and psychological reactance among NCT merchandise consumers (Zhang et al., 2021); the direct impact of this scarcity is then mediated by the organism through the emotional drive of Fear of Missing Out (FOMO),which is rooted in the psychological need for relatedness and autonomy within the fandom community. The intensity of this relationship is further strengthened by the bandwagon effect (Ningsih & Fikriah, 2023), grounded in Social Identity Theory, whereby impulse-buying tendencies increase as consumers observe fellow fandom members also making purchases. The interaction of these cognitive, affective, and social factors ultimately produces impulse buying as a spontaneous emotional response (Zhang et al., 2021).

Impulse buying is often defined as a spontaneous, unplanned purchase made without careful consideration or regard for future implications (Redine et al., 2023; Cai et al., 2021); this behavior can be triggered by product scarcity. Cengiz & Şenel (2024) and Qu et al. (2023) found that scarcity has a direct effect on impulse buying; furthermore, Zhang et al. (2021) note that imbalanced demand-and-supply pressure can shift consumer behavior toward greater impulsivity. Previous studies have demonstrated this across various contexts Cengiz & Şenel (2024) in the fast-fashion industry and Qu et al. (2023) in live-streaming e-commerce yet research exploring the specific psychological mechanisms linking scarcity to impulse buying, particularly the mediating role of emotions such as FOMO, remains limited.

H1: Perceived scarcity has a positive effect on impulse buying.

Within the S-O-R model, environmental stimuli affect the organism through emotion. Przybylski et al. (2013) define FOMO as an individual's apprehension that others may be having rewarding experiences from which one is absent, giving rise to a desire to continuously stay connected with what others are doing; Dahmiri et al. (2023) specifically regard FOMO as an emotion evoked by scarcity. A study by Zhang. et al. (2020) shows that consumers' perception of product scarcity generates a fear of loss that influences their

decisions; in addition, recent research by Kleitsch and Drămnescu (2025) shows that FOMO intensifies consumers' psychological urge to act immediately so as not to miss the opportunity to obtain a desired product. Consumers are driven to act quickly to avoid regret over missing the chance to obtain goods perceived as scarce or highly valuable, as demonstrated by Dahmiri et al. (2023) in the context of fashion products and by Zhang. et al. (2020); however, studies that explicitly test the direct relationship between perceived scarcity and FOMO in e-commerce or digital-platform contexts remain limited.
H2: Perceived scarcity positively affects Fear of Missing Out (FOMO).

As the organism variable, FOMO plays a key role in driving behavioral responses. Charles and Immanuel (2025) found that consumers' anxiety over missing an opportunity (fear of missing out) triggers impulse-buying behavior.; this is supported by Zhang & Rosli (2025), who identify FOMO as a primary driver of impulsivity in live commerce. When consumers feel anxious about missing an opportunity, their purchase decisions rely less on deep deliberation and more on instant reaction (Redine et al., 2023). Although prior research has consistently shown FOMO to be a strong predictor of impulse buying, most existing studies focus on its direct effect, while its role as a mediating mechanism within a more comprehensive model remains underexplored.
H3: Fear of Missing Out (FOMO) has a positive effect on impulse buying.

Impulse buying, as a spontaneous consumption activity driven by emotional impulse (Nailul et al., 2025), involves a rapid reaction to a stimulus without deep evaluation of its long-term consequences (Mandolfo & Lamberti, 2021), with emotion playing the dominant role. This behavior can be triggered by perceived scarcity a strategy of limiting product availability to create a sense of urgency and fear of missing an opportunity (Temel, 2024; Sayan & Uslu, 2024). The effect of scarcity on impulse buying is presumed not to be direct but instead to depend on the level of the bandwagon effect among consumers a psychological phenomenon whereby individuals tend to follow others' behavior due to groupthink or a desire for acceptance (Pratiwi et al., 2022; Lumban Gaol & Wahyudi, 2023). Consumers with a strong bandwagon effect are more likely to buy impulsively when scarcity occurs, because they observe others rushing to purchase the product (Li et al., 2021; Zhang et al., 2022); while prior research confirms this pattern, studies specifically examining the moderating role of the bandwagon effect in the relationship between perceived scarcity and impulse buying remain very limited, particularly within the Indonesian market context.
H4: The bandwagon effect moderates the relationship between perceived scarcity and impulse buying.

Perceived scarcity creates a strong urge for consumers to act immediately, as the fear of missing an opportunity becomes dominant (Sayan & Uslu, 2024); this fear aligns with the concept of FOMO, a psychological state in which individuals experience unease upon realizing that others are enjoying a positive experience they themselves are missing out on (Ardyan & Sanapang, 2023). This anxiety triggers a strong urge to engage in currently popular activities, including purchasing items to maintain self-image and social connection (Mahmud et al., 2023; Kleitsch & Drămnescu, 2025); it is this fear of being left behind that directly triggers impulse-buying behavior (Nailul et al., 2025; Djamhari et al., 2024), as

consumers fear losing an opportunity or feel threatened if they do not purchase immediately (Zhang et al., 2022). Zhang et al. (2022) used the S-O-R model to explain how scarcity, as a stimulus, triggers FOMO as the organism, which then drives impulse buying as the response; however, empirical studies that comprehensively examine FOMO's mediating role while accounting for the moderating factor of the bandwagon effect remain very scarce, particularly within the context of e-commerce platforms in Indonesia.
H5: Fear of Missing Out (FOMO) mediates the relationship between perceived scarcity and impulse buying.

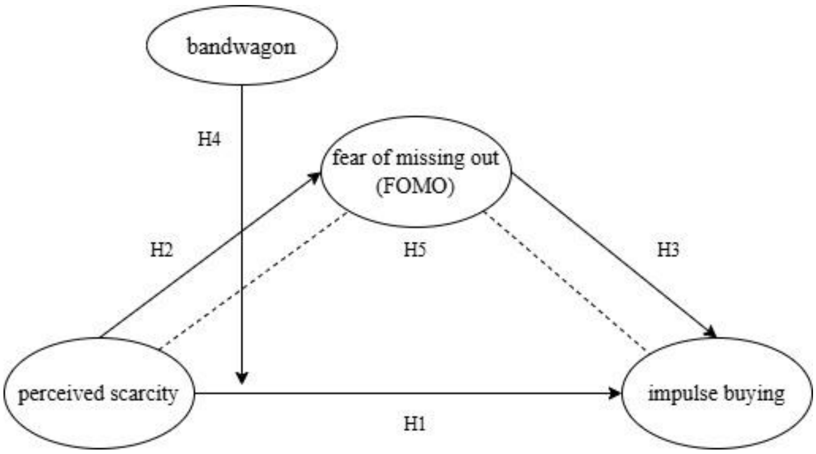

Figure 1. Research Model
Source: Adapted from Zhang et al. (2022)

Methods

This study employs a quantitative design with a causal approach to analyze the effect of perceived scarcity on impulse buying, with FOMO as a mediator and the bandwagon effect as a moderator. The study population consists of consumers who have purchased official NCT merchandise; the "has purchased" criterion was chosen because impulse-buying research requires respondents with actual purchase experience in order to avoid bias between intention and action (Beatty & Ferrell, 1998). The unit of analysis is individual, active NCT fans aged 17 to 35 years; this age range is based on data from the Korean Foundation for International Cultural Exchange (2023) showing that 68 percent of global K-pop fans fall within this range, as well as findings by Przybylski et al. (2013) that FOMO intensity declines significantly after age 35.

The sampling technique used was purposive sampling, with inclusion criteria comprising having purchased official NCT merchandise at least once, being aged 17 to 35 years, and being able to name at least three NCT members or identify NCT's subunits as an indicator of active fandom; exclusion criteria comprised respondents who had purchased only unofficial merchandise and reseller respondents. Sample size was determined following Hair et al. (2019), who recommend 5 to 10 respondents per parameter for SEM analysis; with 17 indicators, this yielded a minimum target sample of 170 respondents. Snowball sampling was used as an additional technique to reach the NCT fan community through social media platforms and online communities.

Data were collected through an online, Google Forms-based questionnaire designed to capture respondents' perceptions of perceived scarcity, FOMO, the bandwagon effect, and impulse buying related to NCT merchandise.

Table 1. Variable Measurement Indicators

Variable	Code	Indicator
Fear of missing out (FOMO) (Fumar et al., 2023)	FOM1	I feel the urge to spend a lot of money on NCT merchandise/albums/concert tickets so I don't fall behind other fans.
	FOM2	I like to share my experiences buying NCT merchandise/albums/concert tickets on social media.
	FOM3	I feel anxious when my friends buy new NCT merchandise/albums/concert tickets.
	FOM4	I feel anxious when fellow NCT fans buy merchandise/albums/concert tickets without including me.
	FOM5	I feel anxious when my friends have a larger collection of NCT merchandise/albums or attend NCT concerts more often than I do.
Perceived scarcity (PS) (Gupta & Gentry, 2019)	PS1	I feel that NCT merchandise/albums/concert tickets sell out quickly and are rarely resold.
	PS2	I feel that SM Entertainment intentionally limits the number of NCT merchandise/albums/concert tickets, making them hard to get.
	PS3	I feel that the scarcity of NCT merchandise actually makes me even more excited and eager to buy it right away.
Bandwagon Effect (BW) (Zhang et al., 2022)	BE1	I tend to buy NCT merchandise/albums/concert tickets that are currently popular or widely discussed among fans.
	BE2	I want to buy NCT merchandise/albums/concert tickets that other NCT fans are also buying.
	BE3	If I see many fans owning a certain piece of merchandise, I feel like I have to have it too.
	BE4	I feel more confident about buying NCT merchandise if I see many other fans have already bought it.
Impulse buying (IB) (Tran, 2022; Verplanken & Herabadi, 2001)	IB1	I feel very excited and enthusiastic when I see NCT merchandise/albums/concert tickets that I want to buy.
	IB2	When I buy NCT merchandise/albums/concert tickets, it usually happens spontaneously.
	IB3	I often buy NCT merchandise/albums/concert tickets without thinking twice.
	IB4	When I see new NCT merchandise or albums, or when NCT concert tickets become available, I feel a strong urge to buy them right then and there.
	IB5	Most of my NCT merchandise purchases are unplanned.

All variables were measured using instruments adapted from validated prior literature, using a 5-point Likert scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5); this scale was chosen for its ability to capture specific variation in consumer responses, a key prerequisite for multivariate analysis (Hair et al., 2021). Respondent profile data also included demographic characteristics, purchasing behavior, and fandom engagement measured via length of time as a fan and intensity of social-media interaction to provide a more comprehensive understanding of respondents' impulse-buying behavior. The analysis method used was Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4 software, which allows for the simultaneous estimation of relationships among latent variables as well as the testing of mediation and moderation effects. The measurement indicators for each variable are presented in Table 1.

Result and Discussions

Table 2 presents the descriptive data for the survey sample, which comprised 236 respondents who are consumers of NCT merchandise. The analysis results show that 87.71% of respondents were female and 12.29% were male, indicating that NCT merchandise consumers are predominantly female. In terms of age, the majority of respondents were between 21 and 25 years old (56.40%), followed by the 26–30 age group (21.60%), respondents aged ≤20 years (15.70%), and those above 30 years old (6.40%). Regarding occupation, the largest proportion of respondents were students (44.07%), followed by private-sector employees (30.08%), civil servants/government employees (10.17%), entrepreneurs (5.93%), and other occupations (4.24%). These findings indicate that the demographic target of this study is dominated by young individuals of productive age, predominantly female, with occupational backgrounds as students or private-sector employees a group that, by nature, shows a higher tendency toward consuming products based on pop-culture preferences, such as NCT merchandise.

Table 2. Demographic Characteristics of Research Respondents

Variable	Category	Frequency	Percentage
Gender	Female	207	87.71%
	Male	29	12.29%
Age	≤ 20 Years	37	15.70%
	21–25 Years	133	56.40%
	26–30 Years	51	21.60%
	> 30 Years	15	6.40%
Occupation	Student	104	44.07%
	Private Employee	71	30.08%
	Civil Servant / Government Institution	24	10.17%
	Entrepreneur	14	5.93%
	Other	10	4.24%

Validity testing in this study was conducted using two approaches: convergent validity and discriminant validity. Convergent validity was assessed based on the outer loading value of each indicator and the Average Variance Extracted (AVE) value of each construct. In the initial testing, two indicators showed outer loading values below the 0.70 threshold namely FOM2 on the Fear of Missing Out construct and IB1 on the Impulse Buying construct and both were therefore removed from the measurement model (Hair et al., 2019). After the elimination process and re-testing, all remaining indicators achieved outer loading values ≥ 0.70, and the AVE values for all constructs exceeded the minimum threshold of 0.50: Bandwagon Effect (AVE = 0.603), Fear of Missing Out (AVE = 0.743), Impulse Buying (AVE = 0.657), and Perceived Scarcity (AVE = 0.566). Thus, the convergent validity of the research instrument was confirmed.

Next, instrument reliability was measured using Cronbach's Alpha and Composite Reliability (CR). The Cronbach's Alpha values for Bandwagon Effect (0.785), Fear of Missing Out (0.884), and Impulse Buying (0.827) all exceeded the 0.70 threshold, indicating good internal consistency (Hair et al., 2019). Although the Cronbach's Alpha value for Perceived Scarcity (0.637) was slightly below the ideal value, its Composite Reliability of 0.793 still met the minimum requirement of ≥ 0.70; in the context of PLS-SEM, CR is considered a more representative measure of reliability than Cronbach's Alpha (Henseler et al., 2015). Overall, the reliability test results confirm that all constructs in the research model possess an adequate level of reliability.

Table 3. Measurement Model: Validity and Reliability

Variables / Measurement	Outer Loadings	AVE	Cronbach's Alpha	Composite Reliability
Bandwagon Effect		0,603	0,785	0,858
BE1	0,739			
BE2	0,777			
BE3	0,82			
BE4	0,767			
Fear of missing out		0,743	0,884	0,92
FOM1	0,82			
FOM3	0,865			
FOM4	0,875			
FOM5	0,886			
Impulse buying		0,657	0,827	0,885
IB2	0,797			
IB3	0,847			
IB4	0,791			
IB5	0,807			
Perceived scarcity		0,566	0,637	0,793
PS1	0,864			
PS2	0,586			
PS3	0,779			

The final stage in the construct validity evaluation was discriminant validity testing, assessed by comparing the cross-loading values of each indicator. Discriminant validity is met when each indicator shows its highest loading value on its intended construct compared to other constructs (Hair et al., 2019). The test results show that all indicators had their highest loading values on the constructs they were intended to measure. For example, indicator FOM5 obtained the highest loading value on the Fear of Missing Out construct (0.886), indicator IB3 had the highest loading on the Impulse Buying construct (0.847), indicator PS1 had the highest loading on the Perceived Scarcity construct (0.864), and indicator BE3 had the highest loading on the Bandwagon Effect construct (0.820). These findings confirm that all indicators in this study meet the discriminant validity criteria, and the research instrument is therefore declared valid and reliable for use in structural model testing.

This study applied t-statistic testing to examine the relationships among the latent variables in the structural model constructed. Based on the decision criteria at a 95% confidence level (α = 0.05) using a two-tailed approach, a relationship is considered statistically significant when the t-statistic exceeds 1.96 with a probability value below 0.05. A comprehensive overview of the direction and strength of the relationships among variables is presented in Figure 2.

Based on the model estimation output, perceived scarcity shows a significant contribution to the emergence of Fear of Missing Out (FOMO) among NCT Figure 2.

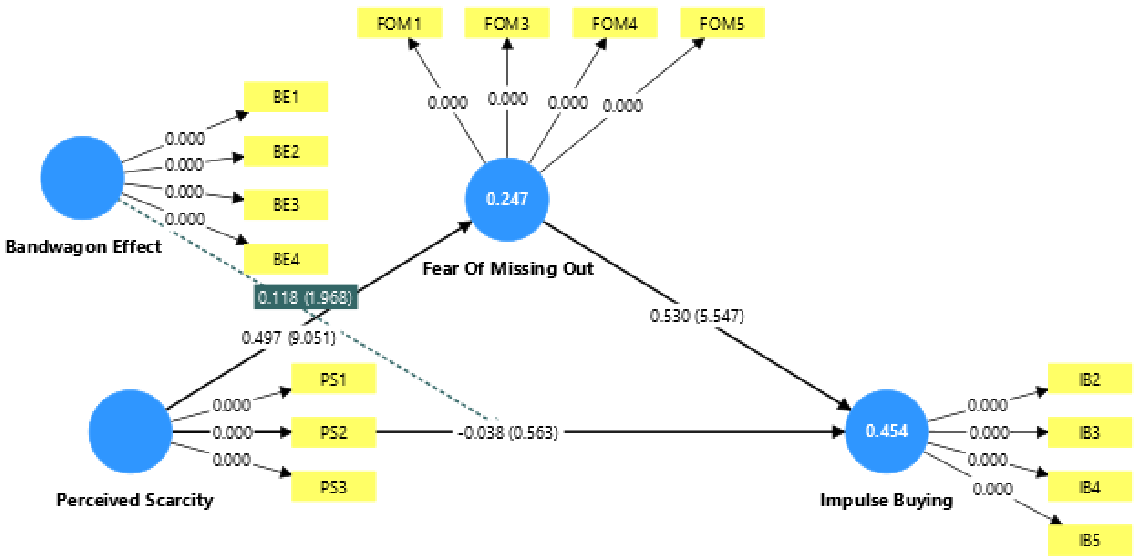

Figure 2. SEM Test Results

Merchandise consumers (β = 0.497, t = 9.051, p = 0.000). This means that when consumers believe a product is limited and difficult to obtain, this condition consistently triggers concern about being left behind. Furthermore, the FOMO experienced by consumers is shown to significantly drive impulsive buying (β = 0.530, t = 5.547, p = 0.000), indicating that the psychological pressure caused by fear of missing out results in unplanned purchasing decisions. On the other hand, the direct path from perceived scarcity to impulsive buying failed to reach a significant level (β = −0.038, t = 0.563, p = 0.573), so it can be concluded that scarcity alone is not strong enough to independently trigger impulsive behavior without the presence of a mediating variable.

Table 4. Path Coefficients of Direct Effects Among Variables

Hypothesis	Original Sample (O)	Sample Mean (M)	STDEV	T Statistics	P Values	Result
FM → IB	0.530	0.530	0.096	5.547	0.000	Accepted
PS → FM	0.497	0.502	0.055	9.051	0.000	Accepted
PS → IB	-0.038	-0.035	0.068	0.563	0.573	Rejected

The R-Square (R^2) value in PLS-SEM is used to measure the proportion of variance in endogenous variables explained by the exogenous variables in the model. The calculation results show that the FOMO variable obtained an R^2 value of 0.247, indicating that perceived scarcity contributes to explaining approximately 24.7% of the variation in

FOMO, while the remaining proportion is influenced by other determinants outside the scope of this study. Meanwhile, the impulsive buying variable obtained an R^2 of 0.454, meaning that the combination of variables in the model is able to explain 45.4% of the variation in consumers' impulsive buying behavior. Overall, the model demonstrates a more adequate explanatory capacity in predicting impulsive buying than in explaining the formation of FOMO.

Mediation effect testing was conducted using the bootstrapping procedure in SmartPLS, with the results presented in. The analysis findings reveal that FOMO acts as a significant mediator in the chain of influence from perceived scarcity to impulsive buying (p = 0.000). The mediation pattern formed is categorized as full mediation, based on the fact that the direct path from perceived scarcity to impulsive buying is not significant (β = −0.038, t = 0.563, p = 0.573), while the indirect path through FOMO is statistically significant. This condition underscores that product scarcity does not, by itself, drive consumers to make impulsive purchases; rather, it first triggers a feeling of anxiety about being left behind, which then becomes the main driver of impulsive behavior. In the context of NCT merchandise, the perception that an item is exclusive and likely to sell out sparks FOMO, which ultimately leads to sudden purchasing decisions.

The results of the moderation effect testing show that the interaction between perceived scarcity and the bandwagon effect has a significant influence on impulsive buying (β = 0.118, t = 1.968, p = 0.049). The positive interaction coefficient indicates that the bandwagon effect functions as an amplifier in the relationship between perceived scarcity and the tendency toward impulsive buying. In other words, consumers with high sensitivity to the collective behavior of their fan community show a much more intense impulsive response when confronted with products perceived as scarce. Within the NCT fandom ecosystem, the social dynamic of pressure to own a collection comparable to fellow fans amplifies the impact of scarcity on unplanned purchases, making the bandwagon effect a relevant and meaningful moderating variable in this research model.

The first hypothesis states that perceived scarcity has a positive effect on FOMO. The test results show a value of β = 0.497 with a T-statistic of 9.051 and p = 0.000, so H1 is accepted. This effect is classified as strong, with an effect size approaching large (f^2 = 0.327).

This finding confirms that the perceived scarcity of NCT merchandise significantly triggers consumers' fear of missing out. When consumers perceive a product as scarce and limited in availability, this condition increases their psychological urgency to obtain the product before it sells out, which manifests in the form of FOMO. Zhang et al. (2022) confirmed a similar mechanism in the context of high-scarcity products, in which perceived limitations in supply directly increase consumers' anxiety about missing an opportunity.

This study confirms that perceived scarcity has a positive and significant effect on FOMO (β = 0.497; p = 0.000; f^2 = 0.327), affirming perceived scarcity as an effective stimulus for triggering an organismic response, in line with Commodity Theory (Brock, 1967), which holds that limited availability increases the psychological value of an object. Within the NCT fandom with its pattern of repackaged album releases, photocards, and limited-quota fan-meeting packages this scarcity stimulus carries both economic value and symbolic value as a marker of identity and community membership (Ardhiyansyah et al., 2021). The perception that merchandise sells out quickly and is rarely restocked triggers loss aversion, consistent with Prospect Theory (Kahneman & Tversky, 1979), producing a stronger psychological response than an equivalent potential gain would. Rozalia et al. (2023) confirmed that this mechanism holds consistently in Indonesian e-commerce, where limited-stock notifications increase consumer anxiety. Scarcity strategies whether exclusive editions or limited-quota pre-orders proved effective as a stimulus that triggers FOMO among NCT consumers.

Interestingly, perceived scarcity has no direct effect on impulse buying ($\beta = -0.038$; $p = 0.573$), rejecting the assumption that a scarcity stimulus is automatically translated into a purchasing response. This finding reinforces the basic premise of the S-O-R framework that the stimulus–response relationship is mediated by the organism's internal condition: K-pop merchandise consumers are high-involvement consumers who process scarcity information elaboratively before purchasing (Ladeira et al., 2023), such that FOMO fully absorbs the influence of scarcity as a full mediator the S→R path is only realized once it first passes through the O component. Ladeira et al. (2023) concluded that the direct effect of perceived scarcity consistently weakens once an emotional mediator is included in the model, a finding confirmed by Zhang et al. (2022) and Dahmiri et al. (2023), who found FOMO to be a significant mediator between perceived scarcity and impulse buying. The implication is that the effectiveness of scarcity strategies in NCT consumption depends on their ability to trigger FOMO particularly through the threat of exclusion from the community.

FOMO proved to be the strongest predictor of impulse buying ($\beta = 0.530$; $T = 5.547$; $p = 0.000$; $f^2 = 0.243$), confirming its position as the core organism component within the S-O-R framework of this study: FOMO converts cognitive scarcity information into emotional pressure that drives immediate action, bypassing rational deliberation. Zhang and Rosli (2025) showed that FOMO is one of the main factors that significantly increases impulsive purchasing behavior, particularly when consumers face social pressure and a perception of urgency within a digital shopping environment. In NCT consumption, this organism-to-response transition is reinforced by platform features such as remaining-stock displays and direct interaction with the artists, as well as by the characteristics of Generation Z, who show a higher tendency toward impulse buying (41%) compared to millennials (34%) and Gen X (32%) due to their intensive engagement on social media (Lina et al., 2022). This pattern of full mediation with PS→FOMO ($\beta = 0.497$) and FOMO→IB ($\beta = 0.530$) both significant, while the direct PS→IB path is not significant demonstrates the complete S→O→R pathway: scarcity cannot directly produce impulse buying without first being processed as FOMO, extending the findings of Zhang et al. (2022) to the context of K-pop merchandise.

This study also confirms the moderating role of the bandwagon effect on the relationship between perceived scarcity and impulse buying ($\beta = 0.118$; $T = 1.968$; $p = 0.049$). Within the S-O-R framework, this shows that the strength of the stimulus–response relationship depends on the contextual-social conditions surrounding the organism: the bandwagon effect acts as an amplifier that lowers the organism's resistance threshold to the scarcity stimulus, as confirmed by Zhang et al. (2022), who reported a moderation effect of $\beta = 0.099$ ($p < 0.001$). Mai (2026) confirmed the bandwagon effect as a significant psychological pathway driving impulse buying within community-based digital environments, where the visibility of others' consumption behavior creates strong social pressure relevant to NCT fandom culture, which actively shares merchandise-hunting activities on social media. The small effect size (f^2 = 0.026) can be explained by the high intrinsic motivation and emotional attachment of NCTzens toward the artists, although community pressure remains a relevant amplifying factor when scarcity creates purchasing urgency.

Overall, these findings depict a complete S-O-R pathway: the scarcity stimulus from exclusive marketing strategies is processed into FOMO, reinforced by bandwagon pressure from the NCTzen community, before culminating in an impulsive purchasing response. Scarcity is not a standalone trigger of impulse buying; rather, it is effective only insofar as it is able to penetrate the consumer's psychological and social layers an important implication for NCT merchandise marketing strategies built around fandom communities.

Conclusion

This study concludes that perceived scarcity does not directly drive impulsive purchasing among NCT merchandise consumers, but instead operates entirely through the psychological mechanism of FOMO. This means that a scarcity-marketing strategy only becomes effective in triggering impulsive buying when it is able to arouse anxiety about being left behind not merely by conveying information about limited stock, but by activating a social threat in the form of the risk of exclusion from the community. FOMO proved to be the most dominant psychological factor driving impulsive purchasing behavior, while the bandwagon effect strengthens the relationship between scarcity and impulsive buying through the social pressure of the fandom community. Theoretically, these findings reinforce the S-O-R framework within the context of the digital fandom ecosystem, in which impulsive purchasing behavior is determined not solely by the product scarcity stimulus, but more by the emotional and social dynamics formed within the fan community. Practically, K-pop merchandise marketers need to combine scarcity cues with social elements that arouse FOMO, and leverage the visibility of the community's collective behavior to amplify the bandwagon effect, in order to drive more effective purchasing decisions.

This study has limitations in its use of purposive sampling based on an online questionnaire, which may have produced self-selection bias, since respondents tend to be more active fans; a cross-sectional design that cannot capture changes in consumer behavior dynamics over time; and a scope limited to a single fandom group, meaning the generalizability of the findings requires further testing.

Each direction for future research proposed below is intended as a response to the limitations or specific findings discussed above, rather than as a stand-alone extension. First, a more representative random sampling approach is needed to address self-selection bias, while also allowing for re-evaluation of construct validity across a more heterogeneous population of fans not only the most active ones. Second, since this study shows that FOMO operates by bypassing consumers' rational deliberation, self-control deserves to be tested as a moderating variable that may potentially restrain the translation of FOMO into impulse buying. Third, hedonic motivation is worth exploring, since Commodity Theory (Brock, 1967) positions the psychological value placed on a scarce object not merely its functional value as the primary driver of consumer behavior.

Fourth, given that this study found that direct interaction with the artists further strengthens the transition from FOMO to impulse buying, parasocial relationships with NCT members deserve to be tested as an additional moderator. Fifth, a longitudinal design covering several merchandise release cycles is needed to address the limitations of the cross-sectional design, in order to capture whether the intensity of FOMO and the bandwagon effect remains stable or instead weakens due to repeated exposure. Finally, since these findings are still limited to a single fandom community, comparative research across different K-pop fandom groups is important to test whether the strength of the S-O-R relationship particularly the role of the bandwagon effect varies according to community characteristics.

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