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THE INFLUENCE OF SCARCITY PERSUASION AND PRICE PERCEPTION ON ONLINE IMPULSE BUYING BEHAVIOUR MEDIATED BY AROUSAL: A SURVEY OF CONSUMERS OF SKINTIFIC SKINCARE PRODUCTS IN TIKTOK LIVE STREAMING

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ABSTRACT

This study examines the effects of scarcity persuasion and price perception on online impulse buying among consumers purchasing Skintific skincare products via TikTok Live, with arousal as a mediating variable. Using a quantitative approach, data from 170 respondents were analysed with SEM-PLS using SmartPLS 4.1. The results show that scarcity persuasion has a positive and significant effect on impulse buying, while price perception has no direct effect. Both scarcity persuasion and price perception significantly increase arousal; however, arousal does not influence impulse buying and does not mediate either relationship. These findings suggest that although live streaming increases emotional activation, skincare purchase decisions remain largely rational. The study highlights the effectiveness of time- and quantity-based scarcity strategies in driving impulsive purchases in live commerce settings.

INTRODUCTION

Online impulse buying behaviour refers to spontaneous and unplanned purchasing decisions that increasingly occur in digital shopping environments (Solomon, 2022). The rise of live-streaming commerce has further accelerated this trend by enabling real-time interactions between sellers and consumers, allowing product demonstrations, instant feedback, and rapid decision-making. Globally, the live commerce market reached USD 128.4 billion in 2024 and is projected to grow to USD 168.7 billion in 2025, with beauty and personal care emerging as key contributors to this growth (Grandviewresearch, 2025).

In Indonesia, online impulse buying remains more dominant on conventional e-commerce platforms than on live shopping channels. Despite the interactive advantages of live commerce, consumers still show stronger preferences for traditional online marketplaces (Katadata, 2024). Nevertheless, TikTok Live has experienced rapid growth, particularly in the beauty category, where user engagement continues to increase (Tricuise, 2025).

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Skintific, a science-based skincare brand, represents one of the most successful adopters of live-streaming strategies. It ranks first in TikTok Shop revenue with USD 53.68 million in sales (Kalodata, 2024). These strategies are designed to stimulate emotional responses and potentially trigger online impulse buying. Preliminary survey findings indicate that consumers often feel rushed and influenced by limited stock and short promotional durations during TikTok Live sessions (Irbah et al., 2025).

However, prior studies on Scarcity Persuasion and Price Perception show inconsistent results. Some research suggests that scarcity cues increase urgency and impulsive purchases (Feng et al., 2024; Hao & Huang, 2025; Lo et al., 2022), while others report no significant effect as consumers become accustomed to such tactics (Martiza & Hadi, 2025; Yulianto et al., 2021). Similarly, Price Perception is found to drive impulse buying in some studies (Hussain et al., 2024; Lee & Chen, 2021; Luo et al., 2021), yet others argue that consumers evaluate prices rationally, limiting impulsive responses (Firdaus & Santoso, 2023; Zhao et al., 2022).

Arousal has been proposed as a psychological mechanism linking marketing stimuli to impulsive behaviour, but empirical evidence remains mixed. While several studies confirm its positive role in stimulating impulse buying (Lo et al., 2022; Ngo et al., 2024; Wu et al., 2021), others suggest that self-control can suppress emotional impulses (Firdaus & Santoso, 2023; Zhao et al., 2022). These inconsistencies highlight a research gap, particularly within highly interactive live-streaming environments.

Consequently, this study examines the effects of Scarcity Persuasion and Price Perception on Online Impulse Buying Behaviour, with Arousal as a mediating variable, focusing on consumers of Skintific skincare products in TikTok Live sessions.

LITERATUR REVIEW

1. The Stimulus–Organism–Response (SOR)

The Stimulus–Organism–Response (SOR) theory is a foundational psychological framework frequently applied in consumer behaviour and marketing research, positing that external stimuli shape an individual's internal psychological state, which subsequently produces behavioural responses (Lee & Chen, 2021). Conceptualises SOR as a mechanism linking external cues with behavioural outcomes through internal cognitive and affective processing (Xia et al., 2024).

2. Online Impulse Buying Behaviour

Online Impulse Buying Behaviour refers to spontaneous and unplanned purchase decisions that arise during consumers' interactions with digital platforms. It is commonly driven by emotional impulses and digital stimuli such as product visuals, ease of navigation, personalised recommendations, and time-limited offers (Kaur & Sharma, 2024; Lee & Chen, 2021; Verhagen & van Dolen, 2011). Key indicators of this behaviour include spontaneous reactions to online stimuli, purchases made without prior planning or intention, and sudden shifts in desire to buy triggered by persuasive content or interactive features (Ngo et al., 2024).

3. Scarcity Persuasion

Scarcity Persuasion refers to a persuasive technique that leverages perceived limitations in product availability to heighten consumer desire and stimulate purchasing. (Feng et al., 2024) define it as the extent to which consumers feel persuaded to buy goods that are difficult to access, while (Zhang et al., 2022) emphasise its role in triggering impulse buying through fear of missing out in e-commerce settings. Its indicators, based on Septian (2025), include product scarcity, time-limited offers, stock-limited offers, and product exclusivity, each of which increases perceived value and encourages consumers to make immediate purchase decisions.

4. Price Perception

Price Perception refers to how consumers interpret, evaluate, and internalise price information, extending beyond the nominal value to include assessments of fairness, accuracy, and the alignment of price with perceived product benefits. Amasuba & Apriani (2024) define it as consumers' evaluation of the amount they must pay relative to the value received, while Khairunnisa (2023) highlights that price perceptions are shaped not merely by numeric figures but also by brand image and consumer loyalty. Its indicators, based on Amasuba & Apriani (2024), include perceptions of fair pricing, pricing accuracy, reasonableness of payment policies, ethical price changes, and the overall acceptability of the price to consumers.

5. Arousal

Arousal refers to an individual's emotional excitation or level of psychological stimulation when exposed to specific marketing stimuli, and is widely used to explain impulsive purchasing within digital and live-streaming commerce (Bagozzi et al. (2021). Chen et al. (2023) frame it as feelings of enthusiasm or emotional excitement arising from appealing promotional cues. Its indicators, based on Ngo et al. (2024), include feeling excited, active, aroused, and stimulated, each reflecting elevated emotional and physiological activation in response to marketing stimuli.

6. Relationships Between Variables

Wu et al. (2021) explain that Scarcity Persuasion operates through two main forms limited-time and limited-quantity cues which heighten emotional arousal and directly trigger impulsive actions in online settings. This view is supported Feng *et al.* (2024); Hao & Huang (2025) dan Lo *et al.* (2022), who consistently report a positive and significant effect of Scarcity Persuasion on Online Impulse Buying Behaviour, arguing that perceptions of scarcity elevate urgency and perceived product value, prompting

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spontaneous purchasing. However, contrasting evidence from Martiza & Hadi (2025) dan Yulianto *et al.* (2021) shows that repeated exposure to scarcity messages such as "only today" or "few items left" reduces their impact, thereby weakening impulsive responses. Based on these findings, the following hypothesis is formulated:

H_1: Scarcity Persuasion has a positive and significant effect on Online Impulse Buying Behaviour.

Price Perception, defined as consumers' evaluation and interpretation of price cues in online shopping (Amini & Rahmawati, 2025), also plays an important role in stimulating impulse purchases. Price discounts, promotional deals, and perceived price advantages serve as strong stimuli that trigger impulsive behaviour (Rani & S, 2023). Empirical support for this positive relationship is provided by Hussain *et al.* (2024); Feng *et al.* (2024); Lee *et al.* (2021); Luo *et al.* (2021), who argue that attractive price perceptions elicit positive emotions, perceived value, and purchase urgency, thereby encouraging unplanned buying. Conversely, Firdaus & Santoso (2023) dan Zhao *et al.* (2022) find no significant effect, explaining that consumers have become accustomed to discount-based promotions and thus increasingly rely on rational evaluation rather than emotional triggers. Accordingly, the hypothesis proposed is:

H_2: Price Perception has a positive and significant effect on Online Impulse Buying Behaviour.

Scarcity Persuasion is also believed to influence Arousal, which reflects consumers' psychological stimulation and emotional activation when confronted with persuasive marketing cues (Wu *et al.*, 2021). Zhang *et al.* (2022), note that scarcity messages can evoke tension, alertness, and excitement core indicators of arousal. This positive association is further supported by Ngo et al. (2024); Suwito & Susilowati (2025); Wu et al., (2021), who find that limited-time cues generate stronger arousal than limited-quantity cues due to time-pressure effects. Nonetheless, Martiza & Hadi (2025) argue that repeated exposure to scarcity messages reduces consumers' emotional response, rendering Scarcity Persuasion ineffective in stimulating Arousal. Hence, the following hypothesis is proposed: H_3: Scarcity Persuasion has a positive and significant effect on Arousal.

Similarly, Price Perception is assumed to influence Arousal, as attractive pricing such as discounts or beneficial price offers may generate excitement and emotional activation (Rani & S, 2023). Studies by Hussain *et al.* (2024); Feng *et al.* (2024); Lee *et al.* (2021) confirm a positive effect, suggesting that favourable price perceptions enhance feelings of satisfaction, enthusiasm, and emotional engagement during online shopping. However,

findings from Firdaus & Santoso (2023); Zhao *et al.* (2022) reveal that frequent price promotions may diminish emotional reactions, resulting in no significant influence of Price Perception on Arousal. Based on this, the hypothesis is as follows:
H_4: Price Perception has a positive and significant effect on Arousal.

Arousal itself plays a key role in stimulating Online Impulse Buying Behaviour by increasing emotional activation and reducing cognitive control (Amini & Rahmawati, 2025). This relationship is supported by Lo *et al.* (2022); Ngo *et al.* (2024); Wu *et al.* (2021), who demonstrate that heightened arousal—driven by time-pressure promotions, attractive visuals, or interactive seller recommendations—encourages spontaneous purchasing decisions. In contrast, Firdaus & Santoso (2023); Zhao *et al.* (2022) find that consumers with high self-control can suppress emotional impulses, leading arousal to have no significant effect on impulsive buying. The following hypothesis is proposed:
H_5: Arousal has a positive and significant effect on Online Impulse Buying Behaviour

Arousal further serves as a psychological mechanism that mediates the relationship between Scarcity Persuasion and Online Impulse Buying Behaviour. As suggested by Xia *et al.* (2024), scarcity stimuli function as external triggers while arousal represents the internal response that bridges these stimuli with buying behaviour. Empirical support for this mediating role is provided by Islam *et al.* (2021); Wu *et al.* (2021). However, studies by Hao & Huang (2025); Shuang & Ambad (2025) indicate that impulsive purchases may also arise from cognitive evaluations rather than emotional responses, resulting in a non-significant mediating effect of Arousal. Based on previous findings, the following hypothesis is developed:
H_6: Arousal mediates the effect of Scarcity Persuasion on Online Impulse Buying Behaviour.

A similar mediating mechanism is proposed between Price Perception and Online Impulse Buying Behaviour. When consumers perceive a price as attractive or rare, their emotional arousal may increase, subsequently strengthening impulsive purchase decisions (Feng *et al.*, 2024; Wu *et al.*, 2021; Xu *et al.*, 2023). Nevertheless, Hermawan & Dermawan (2024); Salam & Jayadi (2023) argue that promotional prices do not always elicit emotional reactions, meaning arousal does not consistently mediate the effect of Price Perception on impulsive buying. Thus, the hypothesis is as follows:
H_7: Arousal mediates the effect of Price Perception on Online Impulse Buying Behaviour.

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7. Research Framework

Based on the relationships identified among the variables, this study develops a conceptual research framework. The research framework is presented in Figure 1.

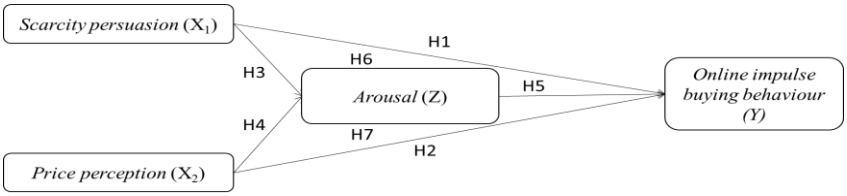

Figure 1. Research Framework

METHOD

This study employs a quantitative approach to analyse the effects of Scarcity Persuasion, Price Perception, and Arousal on Online Impulse Buying Behaviour among Indonesian consumers of Skintific products during TikTok Live sessions. Data were collected between November and December 2025 using a structured online questionnaire. Given that the population size is unknown, purposive sampling was applied to target respondents domiciled in Indonesia who had purchased Skintific products via TikTok Live at least once within the previous six months.

In accordance with SEM-PLS sample size recommendations of five to ten times the number of indicators, and with 17 indicators included in the model, a total of 170 respondents were obtained, satisfying the required sample size. Primary data were collected through Google Forms and operationalised using validated indicators for each construct. Data analysis was conducted using SEM-PLS with SmartPLS version 4.1.

RESULTS AND DISCUSSION

The result began with an initial sample of 170 respondents. After data screening, three respondents were excluded for not meeting the criterion of having previously used Skintific products, resulting in 167 valid respondents included in the analysis. This screening process ensured that all observations were relevant and met the predefined research criteria. Data analysis in this study employed Structural Equation Modelling using Partial Least Squares (SEM-PLS) version 4.1. The analytical procedure comprised two main stages: assessment of the outer model and testing inner model of the structural model

1. Data Analysis Technique – Outer Model

. The outer model evaluation involved examining indicator validity through outer loadings and Average Variance Extracted (AVE), alongside assessing reliability using

Cronbach's Alpha and Composite Reliability. The corresponding results are presented in table 1.

Table 1. Data analysis technique (validity test) – outer loading

Indikator	SP_X1	PP_X2	AR_Z	OIBB_Y
SP_1	0,803			
SP_2	0,763			
SP_3	0,806			
SP_4	0,792			
PP_1		0,840		
PP_2		0,799		
PP_3		0,828		
PP_4		0,779		
PP_5		0,747		
AR_1			0,879	
AR_2			0,810	
AR_3			0,842	
AR_4			0,825	
OIBB_1				0,866
OIBB_2				0,806
OIBB_3				0,836
OIBB_4				0,800

Source: Smart PLS 4.1

The outer loading results presented in table 1 indicate that all measurement items exhibit loading values above the recommended threshold of 0.70, thereby confirming strong convergent validity across all constructs in the measurement model. Complementing this assessment, table 2 reports the reliability and convergent validity results based on Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE).

Tabel 2. Reliability and Validity test

Variable	*Cronbach's alpha*	*rho_a*	*rho_c*	AVE
SP_X1	0,801	0,804	0,870	0,626
PP_X2	0,858	0,861	0,898	0,639
AR_Z	0,860	0,861	0,905	0,704
OIBB_Y	0,846	0,848	0,896	0,684

Source: Smart PLS 4.1

Table 2 indicates that all constructs meet the required reliability and validity criteria. Cronbach's Alpha and Composite Reliability values for each variable exceed the recommended threshold of 0.70, demonstrating strong internal consistency. The AVE

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values, ranging from 0.626 to 0.704, are all above the 0.50 benchmark, confirming adequate convergent validity.

2. Data Analysis Technique – Hypotesis test

Hypothesis testing was conducted to evaluate the structural relationships among the latent variables. This stage involved examining hypotesis test, assessing the R-Square values, evaluating the Goodness of Fit, and testing the significance of each hypothesis path. The results of the path model and hypothesis testing are presented in Figure 2.

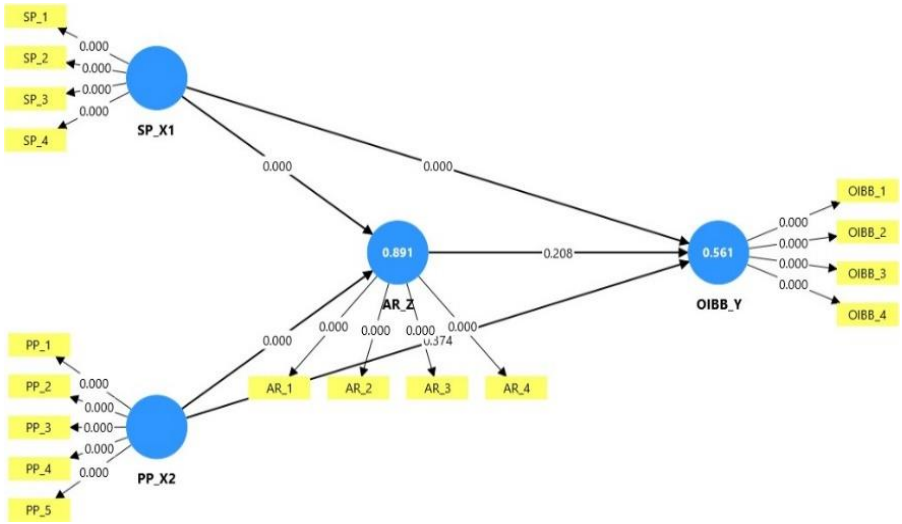

Figure 2. Path Model – Hypothesis test

Figure 2 illustrates the structural relationships among scarcity persuasion, price perception, arousal, and online impulse buying behaviour. The model displays the direct effects of the independent variables through the reported path coefficients. Further details of the results, including the R-Square values, Goodness of Fit assessment, and hypothesis testing, are presented in the accompanying tables. The assessment of the R-Square values is presented in Table 3.

Table 3. R-Square test

Variable	*R-square*	*R-square adjusted*
AR_Z	0,891	0,890
OIBB_Y	0,561	0,553

Source: Smart PLS 4.1

The adjusted R-Square in Table 3 for arousal is 0.890, indicating that 89.0% of the variance in arousal is explained by the exogenous variables, while the remaining 11.0% is explained by other factors outside the model. The adjusted R-Square for online impulse buying behaviour is 0.553, indicating that 55.3% of the variance is explained by the model and 44.7% is influenced by variables not included in this study. Assessment of model fit is further presented in Table 4.

Table 4. Model fit

Model	*Estimated*	95% CI	Criteria	Interpretation
SRMR	0,076	0.057	SRMR ≤ 0.08 → Good Fit	Good Fit
d_ULS	0.882	0.497	- *Estimated* ≤ CI → Good Fit - *Estimated* > CI < 1.5*CI → *Moderate Fit* - *Estimated* ≥ 1,5× CI → *Poor Fit*	*Moderate Fit*
d_G	0.570	0.309	- *Estimated* ≤ CI → Good Fit - *Estimated* > CI < 1.5*CI → *Moderate Fit* - *Estimated* ≥ 1,5× CI → *Poor Fit*	*Moderate Fit*

Source: Smart PLS 4.1

Table 4 shows that the model meets the required fit criteria. Accordingly, the model's fit indices confirm that the estimated parameters can be interpreted with confidence in subsequent hypothesis testing. The subsequent evaluation of hypothesis testing through direct and indirect effects is presented in Table 5 using p-values as the basis for statistical significance.

Table 5. *P-value (direct* dan *indirect effect)*

Relationship	*Original*	T – Statistik	P- values	Hyphotesis
Direct effect				
SP_X1 → OIBB_Y	0,650	5,165	0,000	H_1 Accepted
PP_X2 → OIBB_Y	- 0,047	0,320	0,374	H_2 Rejected
SP_X1 → AR_Z	0,418	4,990	0,000	H_3 Accepted
PP_X2 → AR_Z	0,560	6,356	0,000	H_4 Accepted
AR_Z → OIBB_Y	0,153	0,812	0,208	H_5 Rejected
Indirect effect				
SP_X1 → AR_Z → OIBB_Y	0,064	0,720	0,236	H_6 Rejected
PP_X2 → AR_Z → OIBB_Y	0,086	0,856	0,196	H_7 Rejected

Source: Data SEM-PLS 4.1 (2025)

The hypothesis testing results indicate that scarcity persuasion exerts a significant direct effect on online impulse buying behaviour, while price perception does not. Both scarcity persuasion and price perception significantly influence arousal; however, arousal itself does not significantly predict online impulse buying behaviour. Consequently, the mediating role of arousal in the relationships between scarcity persuasion, price perception, and online impulse buying behaviour is not supported.

4. Discussion

The findings confirm that scarcity persuasion exerts a positive and significant direct effect on online impulsive buying behaviour. This suggests that the stronger the application of limited-time and limited-quantity strategies, the greater the tendency of

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consumers to engage in impulsive purchasing. This result supports Wu et al. (2021), who argue that scarcity cues generate psychological urgency and trigger spontaneous consumption. It is also reinforced by Irbah et al. (2025), who found that limited stock availability and flash sale duration significantly stimulate impulsive buying through perceived urgency.

In contrast, price perception does not significantly influence online impulsive buying behaviour. Although consumers perceive Skintific's prices as fair, such rational evaluations are insufficient to stimulate impulsive purchases. Consistent with dual-process theory, impulsive buying in live commerce is driven more by affective and situational stimuli than by deliberate price assessment (Zhao et al., 2022Consumers are more responsive to flash sales, social interaction, and countdown timers than to price fairness alone. This finding aligns with Firdaus & Santoso (2023) and Zhao et al. (2022). while contradicting studies reporting a significant role of price perception (Hussain et al., 2024; Feng et al., 2024; and Lee et al., 2021).

Scarcity persuasion is found to have a positive and significant effect on arousal. Messages highlighting limited stock, countdown timers, and exclusive live offers intensify emotional tension, urgency, and attentional engagement. This mechanism is consistent with the stimulus–organism–response framework, in which scarcity functions as a stimulus that activates arousal as an internal organismic response (Wu et al., 2021). Arousal theory further explains that time pressure and social competition elevate emotional activation. Ngo et al. (2024) confirm that urgency-based messages in live commerce heighten emotional tension and FOMO, thereby strengthening consumer attention. Accordingly, the present findings support Ngo et al. (2024), Suwito & Susilowati (2025), and Wu et al. (2021), while contradicting Martiza & Hadi (2025).

Price perception is also found to positively and significantly influence arousal. When consumers evaluate prices as favourable, financially advantageous, or superior to alternative platforms, they experience heightened excitement and emotional engagement. This supports affective response theory, which posits that perceived economic value can generate positive emotional activation (Lee et al., 2021). From the perspective of value-based pricing theory, favourable price evaluations generate emotional rewards that enhance psychological involvement (Hussain et al., 2024). This finding strengthens the evidence provided by Hussain et al. (2024), Feng et al. (2024), and Lee et al. (2021), though it contradicts Firdaus & Santoso (2023) and Zhao et al. (2022), who found no significant relationship between price perception and arousal.

Despite the heightened arousal generated by both scarcity persuasion and price perception, arousal itself does not exert a significant direct effect on online impulsive buying behaviour. This indicates that emotional activation alone is insufficient to directly convert live commerce engagement into impulsive purchasing. Dual-system theory offers a plausible explanation: although arousal activates affective processing, skincare products represent a high-involvement category requiring careful evaluation of safety, suitability, and long-term benefits. Regulatory focus theory further suggests that consumers operating under a prevention-focused orientation tend to suppress impulsive tendencies in favour of risk avoidance (Higgins, 2012). This finding aligns with Firdaus & Santoso

(2023) and Zhao et al. (2022), but contradicts Lo et al. (2022), Ngo et al. (2024), and Wu et al. (2021).

The mediation analysis further reveals that arousal does not mediate the influence of either scarcity persuasion or price perception on online impulsive buying behaviour. Although scarcity has a strong direct effect on impulsive buying, this effect does not operate through emotional pathways. Cognitive–affective processing theory (Dingess et al., 2020) clarifies that marketing stimuli may operate through either affective or cognitive routes. In this study, scarcity appears to function primarily through a cognitive mechanism, whereby consumers rationally interpret time limitations as economically advantageous opportunities. This result is consistent with Lee & Chen (2021), Hao & Huang (2025), and Shuang & Ambad (2025). Similarly, arousal fails to mediate the effect of price perception on impulsive buying, reflecting the dominance of central-route processing as explained by the elaboration likelihood model (Petty & Cacioppo, 1986). Consumers evaluate prices based on product safety, efficacy, and value for money before engaging in purchase decisions. These findings are consistent with Hermawan & Dermawan (2024), Lee & Chen (2021), and Salam & Jayadi (2023), while contradicting Feng et al. (2024), Wu et al. (2021), and Xu et al. (2023).

CONCLUSION

This study concludes that Scarcity Persuasion has a positive and significant effect on Online Impulse Buying Behaviour, while Price Perception does not exert a significant direct influence. Both Scarcity Persuasion and Price Perception significantly increase Arousal; however, Arousal does not significantly predict Online Impulse Buying Behaviour and therefore does not function as a mediating variable in this model. These findings indicate that impulsive purchasing in the TikTok Live context is driven primarily by external persuasive cues rather than emotional activation.

From a practical perspective, these results suggest that live-commerce sellers should emphasise time-limited offers, limited stock cues, and exclusive live-session deals to stimulate impulsive purchases. Rather than relying heavily on emotional stimulation, marketers should focus on clear communication, structured promotional timing, and credible scarcity signals that create urgency without overwhelming consumers. For skincare brands in particular, persuasive strategies should be balanced with informative content related to product safety, benefits, and suitability to support purchase decisions.

The research is subject to several limitations. This study focuses on a single skincare brand, which limits the generalisability of the findings across product categories. In addition, Arousal is measured as a single emotional dimension and does not capture cognitive or rational responses that may influence impulsive buying behaviour. The exclusive focus on TikTok Live further constrains the scope of the findings.

Future research is encouraged to incorporate additional emotional constructs such as FOMO and urge to buy, as well as cognitive variables including brand trust, perceived value, and product knowledge, to provide a more comprehensive understanding of online impulse buying behaviour in live-commerce settings.

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