

APPLYING THE S-O-R MODEL TO IMPULSE BUYING BEHAVIOR: THE ROLE OF EMOTIONS AND GENERATIONAL DIFFERENCES

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Abstract

Purpose – This paper investigates the influence of psychological factors from the physical and online retail environment on the tendency towards impulse buying by applying the Stimulus–Organism–Response (S-O-R) model as a theoretical framework. The main purpose of this research is to examine the link between the psychological factors (S), emotional response of the consumer (O) and the impulsive buying behavior (R), using the role of generational affiliation as the moderating variable.

Methodology – A quantitative methodology was employed through an online questionnaire conducted on a sample of 280 respondents from Generations X, Y, and Z. The data was analyzed using a descriptive analysis, reliability analysis, regression analysis and the PROCESS Macro tool.

Findings – It was confirmed that psychological factors significantly impacted the emotional response and tendency towards impulse buying. Furthermore, the emotional response acts as a complete mediator in the relationship between psychological factors and impulse buying. However, generational affiliation did not moderate the examined relationships, pointing towards the universality of emotional and behavioral patterns in buying. The results confirm the relevance of the S-O-R model in explaining impulse buying and point towards the importance of emotional processes in designing effective marketing strategies.

Contributions – The originality of this research is viewed in its integration of an emotional response as a mediating variable within the S-O-R model, as well as in testing generational affiliation as a moderating variable. This expands the theoretical application of the S-O-R model and contributes towards understanding consumer behavior in contemporary sales channels.

Keywords Impulse buying, psychological factors, emotional response, S-O-R model, generational differences, consumer behavior

INTRODUCTION

Impulse buying is a spontaneous, emotion-driven behavior that overrides rational decisions. In today's digital environment, personalised advertising, time-limited offers and social media reinforce this tendency, with online platforms, influencers and algorithms creating an emotionally charged environment. They are influenced by internal factors such as money, time and emotional state, as well as external factors such as promotions, discounts, visual impressions and employee behavior (Ekeng et al. 2012). Impulse buying often arise from sudden needs that suppress self-control (Iram and Chacharkar 2017), and can have both positive effects, such as immediate gratification and emotional relief (Tinne 2011), and negative consequences, such as feelings of guilt, financial stress, remorse and diminished autonomy (Hausman 2000). Long-term

consequences can include irresponsible spending, increased debt and unsustainable consumption (Tanveer et al. 2022), with individuals with low self-control at higher risk of compulsive buying, which is associated with anxiety, depression and impaired well-being.

The theoretical support structure for this paper is found in the Stimulus–Organism–Response (S-O-R) model (Mehrabian and Russell 1974) which is one of the key theoretical frameworks in the area of researching consumer behavior. According to the model, external stimuli (S), such as the elements of a physical store ambiance or the design and functionality of a digital platform, as well as various promotional content, act on the internal processes of the consumer (O), especially emotional reactions. These, in turn, form a behavioral response (R), including impulse buying. Apart from the interaction between the stimulus and emotional response itself, the research focus of this paper was expanded towards generational differences in consumer behavior. This is because there are distinct behavioral patterns in generations X, Y and Z.

Despite increasing interest for the phenomenon of impulse buying, there is a lack of research which views psychological stimuli, emotional reactions and generational specificities in an integrative way within the same analytical framework. It is precisely this theoretical-empirical gap which makes up the basic motivation for conducting this research. In accordance with that, the aims of this paper are as follows:

- To analyze the influence of psychological factors (from the physical and online environment) on impulse buying,
- To examine the mediatory role of an emotional response of the consumer in the relationship between the stimulus and behavioral outcome and
- To analyze generational differences as a moderating element in the observed relationships.

The expected scientific contribution is viewed in a deeper understanding of psychological mechanisms which encourage impulsive behavior of consumers, while highlighting the importance of a generational perspective. The research results may have significant implications for the development of differentiated and targeted marketing strategies within the physical and digital retail sales space.

1. APPLICATION OF THE S-O-R MODEL

The Stimulus–Organism–Response model (later mentioned as S–O–R model), developed by Mehrabian and Russell (1974), represents a key theoretical framework for the understanding of how individuals react to environmental stimuli. It assumes that external stimuli affect internal psychological processes, which then lead to a behavioral response i.e. stimuli-organism-response (Jiang et al. 2023). The model is made up of three interconnected elements:

- Stimulus: triggers which cause a reaction from the buyer and switch on marketing stimuli (Hochreiter et al. 2022) by way of targeted promotions, product variety, visual elements (Chang et al. 2011; Zhao 2022), payment options, website stimuli (Park et al. 2012; Wu et al. 2021) etc. This points to the fact that buying is not only

a rational decision-making process but is often guided by psychological factors which influence consumer behavior.

- Organism: relates to the cognitive (Eroglu et al. 2001) and affective (Feng et al. 2024) processes, such as estimation, memory, excitement and satisfaction which mediate between stimulus and behavior. Individual personality traits, such as impulsiveness and hedonistic motivation (Chang et al. 2011), further form the intensity and direction of internal psychological reactions.
- Response: the outcome relating to consumer behavior. This behavioral outcome may be expressed via two basic patterns: (1) activation response, which includes buying a product without prior intent, and (2) the inhibition response, marked by avoiding a purchase or rejecting a product/brand (Feng et al. 2024).

The S-O-R model is widely applied in fields such as consumer behavior, organizational behavior, purchasing psychology (Mim et al. 2022), sustainable behavior (Ozbuk and Bayhan 2025), tourist loyalty (Zhu et al. 2025), and the impact of online visual stimuli on e-commerce consumer behavior (Bui et al. 2025). Research on impulsive buying is particularly active (Zheng et al. 2019; Gao et al. 2022), especially on social media and digital platforms. For instance, Trinh and To (2025) analysed TikTok Shop impulsive buying, Aishwariya and Vidya (2025) studied AI-driven recommendations, and Trinh and Nguyen (2025) highlighted how social media marketing drives Generation Z's impulse purchases via emotional response and brand resonance. Hongsuchon et al. (2025) also showed that influencer characteristics significantly impact impulsive buying within the S-O-R framework.

2. GENERATIONAL DIFFERENCES AND EMOTIONS IN CONSUMER BEHAVIOR

Consumer habits significantly changed through the generations, whereas impulse buying is highlighted as one of the most marked characteristics of contemporary consumer behavior. Generations X, Y and Z developed different decision-making patterns shaped by technological development, social changes and economic circumstances. Understanding generational specificities is key to the shaping of effective marketing strategies, especially those focused on encouraging impulse buying in online and physical environments. The generational characteristics are:

- Generation X (1965–1979) is often neglected in research despite its consumer importance (O'Bannon 2001). Members are marked by independence, pragmatic decision-making and a good knowledge of technology as witnesses of early internet development.
- Generation Y (od 1980), better known as the Millennials or the digital generation, is technically savvy, highly educated and strongly interconnected via social networks. Their consumer behavior is characterized by a smaller level of hesitance in spending and a higher tendency towards impulse buying (Xu 2007).
- Generation Z (1996–2010) is the first fully digitally raised cohort. They are characterized by a fast-paced rhythm of life, an affinity towards change, intense use of technology and a marked freedom of expression (Tabscott 2009). Negative sides

include impulsiveness, impatience and an extremely short attention span; a mere 8 seconds compared to 12 seconds in Gen Y (Sklencar 2022).

Research increasingly shows that generational characteristics are important for understanding impulsive buying behavior within the S-O-R model. Nguyen (2024) finds that for Generation Z in Vietnam, impulsivity mediates the effect of stimuli (price, website features, peer influence) on purchase behavior. Similarly, Elida et al. (2024) find that shopping enjoyment and generational characteristics moderate the impact of shop atmosphere and discounts on impulsive purchases, emphasising the role of generational and emotional factors.

Bagozzi et al. (1999) emphasise that emotions influence consumer behavior as markers, mediators and moderators and affect cognition, motivation, decision making and satisfaction. Recent studies confirm that emotions play an important role in impulse buying. Wang et al. (2025) show that cognitive confidence and emotional arousal, including anticipated regret, mediate the effect of live-stream shopping stimuli on impulse buying. Adinnegara et al. (2025) also found that positive emotions mediate the influence of shop atmosphere and promotions on impulse purchases, emphasising the central role of emotional processes.

The interaction of generational characteristics and emotions further clarifies impulsive buying. Choirul and Artanti (2019) show that positive emotions mediate the effect of retail stimuli on quick, less conscious purchases among Indonesian Gen Y. Ntobela and Mbukanma (2024) recommend utilising the emotional sensitivity and digital literacy of Gen Y to stimulate impulse buying. Rizal (2025) confirms that positive emotions mediate the impact of digital stimuli, particularly among Gen Y who tend to impulse buy via social media. Overall, emotional and generational mechanisms together are crucial to understanding impulse buying in the digital age.

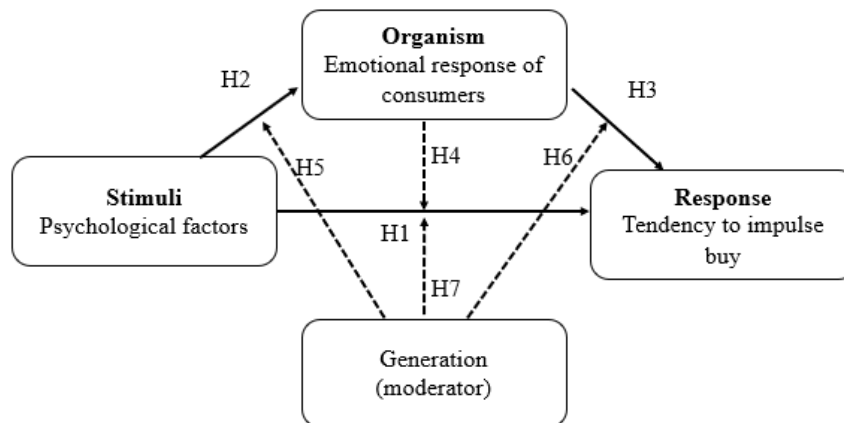
3. CONCEPTUAL RESEARCH DESIGN

The empirical research is based on the theoretical framework of the S–O–R model. The Stimulus (S) construct encompasses psychological factors from the retail sales environment. The Organism (O) construct pertains to the emotional response of the consumer. The Response (R) construct presents impulse buying behavior. The constructs and their variables used in the research were created based on existing scales (Rook and Fisher 1995; Karbasivar and Yarahmadi 2011; Sritanakorn and Nuangjamnong 2021; Gulfraz et al 2022; Alqutub 2023). In addition to the basic relationships between the constructs of the S-O-R model (H1 – H4), this study also includes moderator hypotheses to test the influence of generational affiliation on the strength of the relationship within the model (H5-H7). This tests whether there is a differentiation in emotional and behavioral reactivity depending on generational affiliation. The theoretical base for these hypotheses is found in the concepts of generational marketing (Ordun 2015), as well as in the papers expanding the S–O–R model by including demographic moderators (Peña-García et al. 2022; Asyraff et al. 2023; Basalamah et al. 2024).

- **H1:** Psychological factors (S) positively affect the tendency towards impulse buying (R).
- **H2:** Psychological factors (S) positively influence the emotional response of the consumer (O).
- **H3:** The emotional response of the consumer (O) positively affects the tendency towards impulsive buying (R).
- **H4:** The emotional response of the consumer (O) mediates the relationship between psychological factors (S) and the tendency towards impulse buying (R).
- **H5:** The generation moderates the relationship between the psychological factors (S) and the emotional response of the consumer (O)
- **H6:** The generation moderates the relationship between the emotional response (O) and impulse buying (R).
- **H7:** The generation moderates the relationship between psychological factors (S) and impulse buying (R).

In accordance with the previously defined hypotheses, a conceptual research model was developed that visually represents the assumed relationships between the constructs, including the mediatory and moderator effects (Figure 1).

Figure 1: **Conceptual model**



Source: Authors

3.1. Sample and research description

The empirical research was done by applying the quantitative approach using a structured online questionnaire completed by 280 participants. Respondents were divided into three generational cohorts: Gen X (24.7%), Gen Y (43.2%) and Gen Z (32.1%). The questionnaire consisted of two parts: socio-demographic data (Table 1) and attitudes toward key constructs (Table 1), measured using a five-point Likert scale (1 = completely disagree, 5 = completely agree), enabling statistical analysis of subjective responses.

Table 1: **Sample description**

		N	%
Gender	Male	51	18.2
	Female	229	81.8
Monthly income	Without income	25	8.9
	Up to 400 €	49	17.5
	401 – 800 €	33	11.8
	801 – 1200 €	51	18.2
	1201 – 1600 €	57	20.4
	More than 1601 €	65	23.2
Education level	Secondary school	89	31.8
	Faculty (higher education)	152	54.3
	Master or doctoral study	39	13.9

Source: Authors

A regression analysis, which used the PROCESS Macro tool for SPSS developed by Hayes, was used to test the set hypotheses. Testing the mediatory effect (H4) was done by using Model 4 while the moderator effects (H5–H7) were tested using Model 1.

3.2. Interpretation of results and hypotheses

Prior to performing the main analysis, the internal consistency of the instruments was tested for every construct by using the Cronbach alfa reliability coefficient. Every α -coefficient received overshoot the recommended limit of 0,70 (Nunnally and Bernstein 1994), thus confirming a satisfactory level of reliability of the scales used in research (Table 2).

Table 2: **Construct reliability**

Construct	N	Mean	α
Stimuli (S)	9	2.721	0.845
Organism (O)	5	2.823	0.726
Response (R)	4	2.988	0.700

Source: Authors

A total of seven hypotheses were tested based on the theoretical settings of the S–O–R model. A detailed portrayal of the hypotheses testing results, including the coefficients, significances and interpretations, can be found in Table 3 and in the following paragraphs.

Table 3: **Regression analysis results**

Hypothesis	Relation	B (β)	p-value	R ²	Interpretation
H1	S → R	0.151	0.012	0.023	Confirmed
H2	S → O	0.525	0.000	0.276	Confirmed
H3	O → R	0.198	0.001	0.039	Confirmed
H4	S → O → R	0.0897 (direct) 0.1195 (indirect)	0.35 (direct) 0.03 (indirect)	0.042	Total mediation confirmed
H5	S x GEN	0.0038	0.9622	0,303	Moderation not confirmed
H6	O x GEN	0.0330	0.7528	0,404	Moderation not confirmed
H7	S x GEN	-0.0428	0,7187	0.277	Moderation not confirmed

Source: Authors

H1: Regression analysis results confirm a statistically significant positive effect of psychological factors (S) on the tendency towards impulse buying (R) ($\beta=0,151$; $p=0,012$). Even though the explained variance is relatively low ($R^2=0,023$), the findings confirm the hypothesis H1 and support the basic assumption of the S–O–R model. Psychological elements, such as ambiance of the location, scent, music, promotions, customer support quality and the design and functionality of the online interface, represent significant sensory and heuristic stimuli which affect impulse buying. These findings are congruent with previous research. Visual merchandising and store environment (Vishnu and Raheem 2013), store layout and sales promotion (Tanveer et al. 2022), as well as the courtesy within the store (Mattila and Wirtz 2008), affect the impulsive behavior of the consumer.

H2: The results point to a strong and statistically significant positive influence of psychological factors (S) on the emotional response of consumer (O) ($\beta=0,525$; $p=0,001$), with a significant level of explained variance ($R^2=0,276$). The H2 hypothesis was confirmed, and the findings further support the theoretical structure of the S–O–R model. Psychological stimuli, independent of the sales context, activate emotional states such as excitement, pleasure or lust, further strengthening the emotional component of the decision-making process for buying. This is in congruence with earlier findings on the importance of sensory stimulation and atmospheric elements in forming affective responses (Eroglu et al. 2001; Krishna 2012).

H3: The analysis showed that the emotional response of the consumer (O) significantly predicts the tendency towards impulse buying (R) ($\beta=0,198$; $p=0,001$), whereas the explained variance was $R^2=0,039$. The results confirm hypothesis H3, implying that emotional reactivity acts as a direct predictor of impulse buying. Emotions such as excitement, pleasure or even guilt may reduce the capacity for rational evaluation and increase the tendency towards momentary decision-making. The finding is in congruence

with earlier papers pointing to a key role of emotions in activating impulsive behavior (Rook and Gardner 1993; Hausman 2000; Tinne 2011).

H4: Testing the mediatory effect proved that the emotional response of the consumer (O) significantly mediates the relationship between psychological factors (S) and the tendency towards impulse buying (R). The direct effect of psychological factors on impulse buying loses its statistical relevance while including the emotional response into the model ($\beta=0,0897$; $p=0,35$), while the indirect effect is significant ($\beta=0,1195$; $p=0,03$). These findings point to complete mediation, wherein the psychological factors act on impulse buying exclusively via emotional response. This confirms the central theoretical premise of the S–O–R model.

Moderator variables are not confirmed, as follows:

H5: Generational affiliation does not moderate the relationship between psychological factors (S) and emotional response of the consumer (O), as the interactive effect was not significant ($\beta=0,0038$; $p=0,9622$). This suggests emotional responses to environmental stimuli are consistent across generations, aligning with research on trans-generational perception of hedonistic and sensory cue (Mattila and Wirtz 2008; Krishna 2012).

H6: Generational affiliation does not moderate the relationship between emotional response (O) and impulse buying (R) ($\beta=0,0330$; $p=0,7528$). Emotional responses influence impulsive behavior similarly across generational groups, supporting findings on the stability of emotional influence (Rook and Gardner 1993; Hausman 2000).

H7: Generational affiliation does not moderate the relationship between psychological factors (S) and impulse buying (R) ($\beta=-0,0428$; $p=0,7187$). This indicates that generational differences do not meaningfully affect how psychological stimuli drive impulsive purchases, consistent with prior studies on the universal impact of environmental and communication cues (Krishna 2012).

CONCLUSION

The study confirms the relevance of the S-O-R model for explaining impulsive buying behavior, whereby the central role of emotions as a mediation mechanism is particularly emphasised. The finding of complete mediation shows that psychological stimuli shape consumer behavior primarily through emotional processes and not by directly influencing behaviour. It thus supports earlier theoretical assumptions that emotions act as markers, mediators and moderators of consumer responses (Bagozzi et al. 1999), while contributing to a new understanding of impulsive buying in modern retail and digital environments.

Compared to previous studies, the results of this study offer several important extensions. Previous findings (Nguyen, 2024; Elida et al., 2024) suggest that generational characteristics, particularly within Gen Z, modulate the impact of stimuli and emotional states on impulsive buying. Similarly, Choirul and Artanti (2019) and Rizal (2025)

emphasised that positive emotions are an important mediator of impulse buying among Gen Y, while Ntobela and Mbukanma (2024) highlighted that retailers can benefit from the emotional sensitivity and digital literacy of this cohort. In contrast to these findings, the results of the present study did not confirm a moderating effect of generational cohorts. Emotional responses to psychological stimuli were relatively universal among members of Gens X, Y and Z, suggesting that the affective mechanisms of impulsive buying behavior are more stable and less dependent on generational differences than previously thought.

The theoretical contribution of this study extends the application of the S-O-R model by confirming that the emotional response is the primary channel through which psychological stimuli shape impulsive behavior, while at the same time relativising the importance of generational differences in these processes. Empirically, the study emphasises the consistency of emotional responses across generations, providing a counterpoint to studies that emphasise intergenerational differences. In practise, the results suggest that strategies aimed at increasing emotional engagement are effective across all generations, emphasising the importance of universal emotional triggers over narrowly tailored generational approaches.

The limitation of this research relates to the uneven representation of generations in the sample i.e. the domination in it by members of Gen Y, which may affect the generalization of the results. Lesser representation of Gen X may be explained by a weaker presence in the online distribution channels of the questionnaire, while with Gen Z there is a higher level of selectivity due to frequent polling of the student population. Future research should ensure a quantitatively balanced sample in order to enable a more robust analysis of generational effects. Furthermore, an expansion of the model is suggested by including variables such as self-control, digital literacy or social influence, as well as the testing of the role of social media and influencers in the modulation of impulse buying among generations. Introduction of the longitudinal and experimental approaches would enable a deeper understanding of causal relationships and changes in behavior through time.

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