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## IMPACT OF GAMIFICATION ON GENZ CONSUMERS' ONLINE IMPULSE BUYING BEHAVIOR INTENTION: EVIDENCE FROM SHOPEE APPLICATION IN THE VIETNAMESE MARKET

Tran Thanh Tu<sup>1</sup>  
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**Abstract:** *In the ever-evolving realm of electronic commerce, the volatility of customer buying patterns, specifically impulsive purchases, has escalated. The objective of this study is to examine the integration of gamification strategies within online shopping applications, with the aim of enhancing user satisfaction and stimulating impulsive buying behavior in the online context. This study utilizes the Theory of Mind (ToM) and Stimulus-Organism-Response (SOR) framework in conjunction with Partial Least Squares Structural Equation Modeling (PLS-SEM) to evaluate the influence of gamification elements on impulsive buying behavior, as observed through individual cognitive reactions. By employing a judgemental sampling technique, the study successfully gathers 204 data points via an online survey. Subsequent data analysis confirms the validity of six out of the eight hypotheses, indicating that the impact of random rewards on impulsive purchasing is constrained. This highlights the necessity for e-commerce platform administrators to enhance their gamification strategies, while also indicating that Generation Z (GenZ) consumers might modify their buying behaviors accordingly.*

**Keywords:** *gamification, Gen Z, impulsive buying, SOR framework*

### 1. Introduction

In recent years, according to the Ministry of Industry and Trade (2022), there has been a substantial increase in global e-commerce. In 2021, this sector generated a substantial amount of revenue totalling 4,921 billion USD. In the next four years, this amount is anticipated to rise to \$7,384 billion USD, according to projections. Notably, the countries with the largest market share in e-commerce in 2021 were, among others, China (52%), the United States (19%), the United Kingdom (4.8%), and Japan (3%). According to the Ministry of Industry and Trade, Vietnam's e-commerce revenue in Southeast Asia reached \$13 billion in 2022, putting it on par with Singapore but behind Malaysia, Thailand, and Indonesia. By 2025, Vietnam's e-commerce revenue is expected to reach \$39 billion, according to projections. Moreover, according to Ngoc Cham (2023), Shopee emerges as the dominant player in the Vietnam e-commerce market, capturing a significant market share of 63.1% in terms of revenue among the top 5 e-commerce platforms. This platform's sales surpassed 24.7 billion VND, with 289,7 million consignments delivered successfully by 211,609 sellers. Multiple e-commerce platforms, including Shopee, Lazada, Tiki, and others, incorporate gamification elements today. According to studies conducted by Sarah et al. (2021) and Zhang et al. (2021), these factors have been found to have the potential to affect impulsive purchasing behavior. According to research conducted by Jung-Yong Lee et al. (2019), game elements have a significant impact on customers' impulsive purchasing behavior. Moreover, according to Lo et al. (2016), there are two primary types of purchasing behavior on e-commerce platforms: rational shopping and impulsive buying. Forty percent to eighty percent of individuals engage in aimless shopping (Rodrigues et al., 2021). This statistical evidence suggests that numerous influential factors are likely to influence the impulsive purchasing behavior of customers.

This research has the potential to contribute to the e-commerce platform by providing valuable insights into the purchasing behavior of Gen Z on the Vietnamese market. The lack of research articles in this field on the Vietnamese market presents a challenge for platforms attempting to identify domestic examples. The application of gamification theory and theory of mind (ToM) (Russell et al., 2009; X. Zhang, 2006) enables the audience to gain insights that may be useful in formulating development strategies. In addition, the present study has referenced three widely recognized and utilized gamification elements in order to assess individuals' subjective responses when interacting with these elements and to motivate them to make purchases (Bitrián et al., 2021; Zhang et al., 2021). The objective of this research is to ascertain the stimuli

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that impact online impulse buying behavior by examining affective and cognitive responses. Furthermore, the objective of this research is to examine the degree to which gamification elements, namely badges upgrade, points, and random rewards, influence individuals' cognitive and emotional responses. The present study will incorporate and build upon the findings of prior research conducted by Azmi et al. (2021) and Tarmidi & Setiawan (2022).

The subsequent sections of the research are organized as follows. In this study, we begin by examining relevant literature theories, such as research framework, gamification, and theory of mind, in order to clarify the relationship between these constructs. Following this, we will discuss methodological considerations and data associated with the research model in an effort to identify the factors that lead to online impulse purchases. In conclusion, we will present the findings and discuss their significance.

## **2. Literature Review, Theoretical Framework and Methodology**

### **2.1. Literature Review**

#### *2.1.1. Stimulus-Organism-Response (SOR) framework*

According to Xue Li et al. (2021), the SOR model is commonly employed to investigate human responses. According to Chan et al. (2017), the act of perceiving external stimuli gives rise to a behavioral inclination characterized by both approach and avoidance. Kimiagari and Malafe (2021) emphasize the applicability of the Stimulus-Organism-Response (SOR) model in the field of consumer psychology, elucidating the intricate relationship between individuals' intentions and their subsequent behaviors. The primary objective of this research is to examine the phenomenon of online impulse purchases within the context of the Stimulus-Organism-Response (SOR) framework. The SOR framework is utilized to elucidate the influence of external stimuli on impulsive buying behavior, which is further mediated by internal cognitive and affective responses (L.-T. Nguyen, Nguyen, et al., 2023; Phan et al., 2023).

According to Chan (2017), the SOR framework encompasses three key components, namely stimulus (S), emotional states influenced by the stimulus, and subsequent consumer response (R). Stimuli can be defined as external agents that elicit responses or reactions. In their study, Chen and Yao (2018) discovered a positive correlation between user behavior and internal factors within digital stores. According to Chan (2017), external and internal stimuli can be classified into two distinct categories. The primary objective of this research is to examine the impact of gamification as an external stimulus on individuals' perceptions and impulsive purchasing behavior (L.-T. Nguyen, Dwivedi, et al., 2022). According to Hashmi et al. (2019), individuals who engage in impulsive buying behavior exhibit a higher susceptibility to external stimuli, particularly when facilitated through online platforms.

The organism, which serves as the second element of the Stimulus-Organism-Response (SOR) framework, encompasses internal processes such as cognitive and affective responses. According to previous research conducted by Chan et al. (2017) and Kimiagari & Malafe (2021), it has been observed that positive cognitive reactions tend to encourage impulse buying behavior, while negative cognitive reactions have a deterrent effect on such behavior. Affective responses refer to emotional reactions elicited by information (Chan et al., 2017). Positive emotions, such as feelings of enjoyment, have been found to be a significant factor in driving impulsive buying behavior. The study conducted by Li et al. (2021) investigates the impact of stimuli and organisms on decision-making processes and behavioral outcomes. The presence of positive stimuli has been found to frequently result in impulsive purchasing behavior (Bigne et al., 2020; Tang et al., 2019). This research examines the shopping habits of Gen Z in Vietnam specifically focusing on their usage of the Shopee app. The study aims to explore whether their high level of online familiarity contributes to impulsive buying behavior. Online activities such as advertising and personalized recommendations have the potential to elicit impulsive buying behavior.

#### *2.1.2. Cognitive and Affective theory of mind (ToM)*

The concept of Theory of Mind (ToM) pertains to the cognitive capacity to comprehend and assign mental states, such as beliefs, intentions, desires, and emotions, to both oneself and others (Premack & Woodruff, 1978). Theory of mind refers to the cognitive ability to acknowledge and understand that individuals possess distinct thoughts, emotions, and viewpoints that may diverge from one's own (Cherry, 2021). The

aforementioned concept assumes a pivotal role in the realm of social interactions, communication, and the comprehension of others' behavior. The concept of Theory of Mind is frequently linked to the acquisition of empathy, perspective-taking skills, and the capacity to anticipate and elucidate the behaviors of others (Estes & Bartsch, 2017).

The Theory of Mind framework is deemed appropriate for examining the intention behind impulsive buying behavior due to various reasons. Firstly, this research enables scholars to gain a comprehensive understanding of the psychological factors that contribute to impulsive buying. This is achieved by examining the cognitive processes, intentions, and emotions that prompt individuals to engage in impulsive buying behavior. Consequently, this investigation unveils the underlying motivations and decision-making mechanisms involved in such behavior. Furthermore, the Theory of Mind construct enables the anticipation of impulsive buying behavior intention by examining individuals' perceptions, beliefs, and attitudes pertaining to their own propensities for impulsivity. Through the evaluation of one's self-awareness regarding impulsive inclinations and the comprehension of the underlying causes, researchers can augment their capacity to predict forthcoming behavior. The relationship between impulsive buying and social and emotional triggers is well-established (D. T. V. Dang et al., 2022; Tien, Tri, et al., 2023). The application of Theory of Mind can be instrumental in identifying the specific cues that drive individuals to engage in impulsive buying. These cues may include the desire to conform to social norms, the pursuit of emotional gratification, or the fulfillment of personal desires. Additionally, the empathy component of this framework provides valuable insights into individuals' perceptions and reactions towards marketing strategies. This aids researchers in developing interventions or marketing campaigns that are more effective and align with consumers' preferences. The capacity of Theory of Mind to segment consumers based on their intention for impulsive buying behavior allows marketers to customize strategies for different segments, taking into consideration the varying levels of engagement with Theory of Mind (T. Q. Dang, Nguyen, et al., 2023; H.-B. Nguyen & Nguyen, 2021). In conclusion, the framework provides insight into the cognitive processes that influence consumer decision-making, such as the interpretation of information, evaluation of risks and rewards, and the interaction between immediate desires and long-term objectives. This contributes to a more comprehensive comprehension of the underlying factors that drive impulsive buying intentions.

### *2.1.3. Gamification*

Zhang et al. (2021) say scholars started paying attention to gamification around 2010. Gamification is the use of mechanisms or elements to incorporate gaming into non-traditional game domains, according to Aparicio et al. (2021). Gaming elements are used to influence non-gaming behavior. (Xi & Hamari, 2020) Gamification aims to create rewarding experiences like games to influence user behavior and cognitive processes. Yu and Huang (2022) showed that gamification can also affect emotions and cognition. Addiction, perceived value, pleasure, and curiosity may affect these responses. Gamification is different from game playing, which is mostly for fun, according to Hwang and Choi (2020). Hwang and Choi (2020) identified four gamification traits. These include: (1) regulation-driven progression pathways and increasing difficulty; (2) user feedback and rewards like points and status; (3) social connections that promote group dynamics; and (4) a connection point and user experience driven by aesthetics, synthesis, ease of use, and amusement. Keep in mind that game design elements can affect players' psychological responses and behavioral outcomes depending on the research context (T. Q. Dang, Nguyen, et al., 2023; L.-T. Nguyen, Nguyen, et al., 2022; Phan et al., 2023).

Upgrade badges in Shopee's gamification system to increase your member rank by meeting order quantity and spending requirements. The mechanism has four levels, with the enhanced badge level prominent on the buyer's profile. (Koivisto & Hamari, 2019) These efforts must be consistent and persistent over time to succeed. A digital currency called "accumulating coin points" accumulates points. Consumers can use these points as currency to speed up purchases. Shopee users can earn coins by checking in daily, planting trees, and caring for virtual pets. Shopee often uses random rewards for gamification. This category includes self-selected lottery games like "What Number is This?" Participants can earn points by selecting coupons or coins. If their numbers match Shopee's daily spin, participants may win a lot of points or prizes. "Lucky

Wheel," another game in this category, guarantees all players a prize, but the size is random.

### *2.1.3. Impulse Buying Behavior*

Zhang et al. (2020) define impulse buying as the phenomenon in which consumers experience a sudden desire to purchase a specific product without engaging in extensive cognitive deliberation. Numerous scholars have elaborated on the notion of "impulse buying intent". Impulsive buying behavior pertains to the tangible and evident actions exhibited by consumers when engaging in unplanned and spontaneous purchase decisions. Impulse buying refers to the act of purchasing products or services spontaneously, devoid of deliberate contemplation or premeditated intention. Impulsive purchasing behavior is frequently distinguished by a spontaneous inclination to acquire goods or services, motivated by emotional factors, the desire for instant satisfaction, or external influences such as sales promotions or product presentations. Recent research by Huang et al. (2020) demonstrates that the influence of time scarcity on impulse purchase behavior varies across customer segments, as opposed to exhibiting consistent effects. When faced with scarcity as a result of a limited window of opportunity, Huang et al. (2020) discovered that customers with a heightened sense of power have a greater intention to make a purchase. Li et al. (2021) found that the moderating effect of consumers' impulsive traits on the relationship between time constraints and impulse purchase was not statistically significant. Nonetheless, the researchers suggest that other personal characteristics may play a role in this association. Akram et al. (2018) divides online impulse purchases into four distinct categories: planned impulsive buying (PLB), suggestion impulsive buying (SIB), reminder impulsive buying (RIB), and pure impulse buying (PUB).

In the context of examining Shopee as a case study, it is observed that users are required to engage in social interaction activities, such as "Shaking coin to receive a voucher," "Shopee farm," and "Shopee gift," in order to obtain appropriate rewards within the gamified system (L.-T. Nguyen, Duc, et al., 2023). The phenomenon of online impulse purchases has had a significant impact on the development of the online shopping paradigm. Customers are required to participate in a game in order to receive a discount voucher for purchases. Afterwards, they can add the desired items to their virtual shopping cart and proceed with payment using any of the Shopee- provided payment methods (Aparicio et al., 2021; Wu et al., 2020; Zhang et al., 2021). In addition, Shopee employs persuasive strategies to encourage users to make additional purchases via "Flash sale Shopee" (B. H. T. Nguyen, Le, et al., 2023; L.-T. Nguyen, 2023). This is accomplished by bombarding users with extensive product information or emphasizing the availability of significant discounts for a limited time only. According to Thoumrungrroje (2018), customers may experience a loss of self-awareness and confusion as a result of the overwhelming amount of information they receive when shopping online for goods and services. Therefore, this elevated state of confusion increases the likelihood of engaging in indulgent behavior.

In this study, online impulse purchasing or digital impulse buying, encompasses the occurrence in which consumers engage in unplanned and spontaneous purchase behaviors on the internet (Gulfraz et al., 2022). This behavior is observed to manifest in individuals who engage in impulsive purchasing decisions, lacking in-depth consideration prior to the transaction. Such behavior is frequently motivated by immediate emotional or psychological stimuli. The phenomenon of online impulsive buying can be attributed to a multitude of factors, including the persuasive nature of online advertisements, the presence of limited-time offers, the influence of social media promotions, and the convenience of one-click shopping (Xiang et al., 2016). Therefore, it is imperative for businesses to comprehend the determinants that influence impulsive buying behavior in the online context in order to formulate efficacious marketing strategies and enhance the overall online shopping experience for consumers.

## *2.2. Hypotheses Development*

The process of upgrading badges is a game mechanic that elicits a sense of achievement and competitiveness among players (Zhang et al., 2021). As per the findings of Aparicio et al. (2021), customers experience a progression in their status and are awarded an enhanced badge upon reaching a predetermined threshold. According to Zhang et al. (2021), badges serve as a gamification element that is associated with

achievement. However, the concept of points and random rewards pertains to the gamification mechanism wherein players have the ability to exchange them for virtual currency, as stated by Zhang et al. (2021). Yu and Huang (2022) argue that the inclusion of gamified systems is intended to enhance operational effectiveness. In addition, the implementation of random rewards elicits a heightened sense of anticipation, as posited by Aparicio et al. (2021), who postulated that players are afforded the prospect of obtaining a reward. Therefore, it is hypothesized that:

H1a: The upgrading of badges has a positive impact on affect.

H1b: The implementation of badge upgrades is associated with a positive influence on cognitive abilities.

The gamification mechanism system of Shopee was developed with the primary objective of enhancing user satisfaction during its utilization (Huang et al., 2019). The aforementioned phenomenon has the potential to result in heightened levels of user engagement and extended periods of system usage (Koivisto & Hamari, 2019; Molinillo et al., 2020). In a study conducted by Rahmadhan et al. (2023), it was found that elements such as Points or Rewards have an influence on individuals' purchasing behavior. This finding is supported by the research of Zhang et al. (2021), who demonstrated that Points and Rewards can have an impact on impulsive buying behaviors. Based on the preceding discourse, it is postulated that:

H2a: The utilization of random rewards yields a favorable impact on affective outcomes.

H2b: Randomized rewards yield a beneficial impact on cognitive functioning.

H3a: The presence of points is positively correlated with affective outcomes.

H3b: Points exert a positive influence on cognitive functioning.

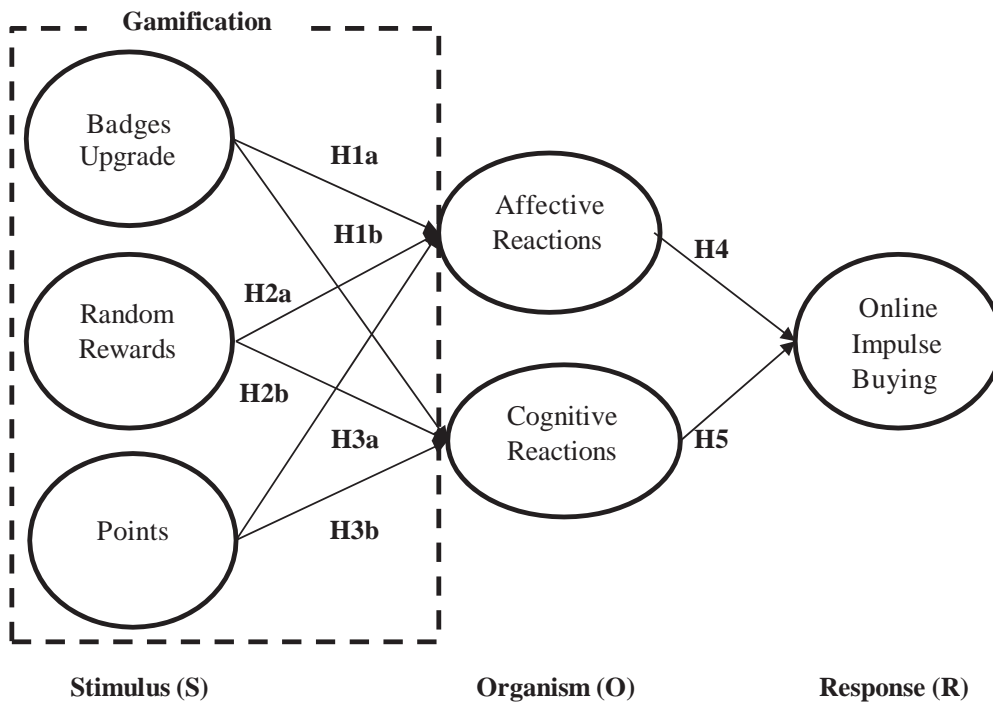
The experience of pleasure is a prevalent element across various domains of human existence, capable of eliciting positive emotional states in individuals (Oh, 2005). Indeed, individuals who have derived satisfaction from their offline shopping experience may be inclined to sustain their positive affective state, leading to an increased propensity for impulsive buying behavior. This inclination arises from their anticipation of immediate gratification resulting from the act of making a purchase (Floh & Madlberger, 2013; Koufaris, 2002). According to a study conducted by Hsu et al. (2012), the flow experience is characterized by a state of positive emotions and intense concentration during the act of making purchases. This heightened state of engagement increases the likelihood of individuals repeating their purchases in the future. Verhagen and Dolen (2011) conducted a study in which they examined the relationship between impulse buying, browsing behavior, urge to buy, and impulse purchasing behavior. For example, within a digital environment, the level of e-service quality has been found to have a positive impact on user satisfaction, subsequently resulting in increased instances of online impulse purchasing (Chan et al., 2017). According to a study conducted by Chan et al. (2017), customers derive pleasure and arousal from positive affective reactions during impulsive purchasing experiences. In accordance with the topic at hand, a hypothesis is proposed as follows:

H4: Affective reactions exert a positive influence on impulse buying behavior.

According to Sofi et al. (2020), it is postulated that the information environment for online customers differs significantly from that of customers who engage in shopping at brick-and-mortar stores. The utilization of the vast amount of information and products available on websites, coupled with the continuous cognitive efforts of individuals, has been employed to facilitate customers in locating products with ease and expediting the purchase process (Lee et al., 2021; Sofi et al., 2020). Due to the convenience of online shopping and the allure of rewards offered by e-commerce platforms, it is anticipated that instances of impulsive buying will manifest during the online purchasing journey. Based on our analysis, we propose the following hypothesis:

H5: Cognitive reactions exhibit a positive influence on impulse buying behavior.

The research model depicted in Figure 1



**Figure 1. Research model**

**2.3. Methodology**

This study employs convenience and judgmental non-probability sampling methods to gather data. In order to successfully accomplish a task, it is imperative to draw upon the expertise of researchers and ensure that respondents possess the necessary standard characteristics (Taherdoost, 2016). The participants were requested to provide information regarding their experience and engagement with impulse buying in the Shopee e-commerce platforms. The participants of this study are required to belong to the Gen Z demographic, born between the years 1995 and 2012, and made an impulsive buying in Shopee e-commerce platforms. The unique characteristics of Gen Z make them an optimal demographic for studying impulsive purchasing tendencies (C. N. B. Dang et al., 2023). The individual's upbringing in an era characterized by digital technology has fostered a sense of ease and familiarity with online platforms, thereby increasing their vulnerability to engaging in impulsive online purchasing behaviors. The continuous access to mobile devices increases individuals' exposure to various stimuli that can prompt impulsive purchasing behavior. Notably, social media platforms significantly contribute to shaping consumers' buying choices by leveraging influencer endorsements and peer recommendations. The trend-conscious disposition and preference for immediate gratification among individuals belonging to Gen Z are well-matched with the impulsive nature of spontaneous purchasing. The confluence of these various factors renders Gen Z a relevant cohort for the investigation of impulsive purchasing tendencies and the comprehension of the intricacies of modern consumerism. The distribution of an online survey questionnaire was conducted through the utilization of Google Forms. According to the G\*Power analysis, the recommended sample size for the current research is 112 (Ooi et al., 2021). This analysis utilizes F tests for linear multiple regression, with an effect size of 0.15, a significance level ( $\alpha$ ) of 0.05, a desired power level ( $1-\beta$ ) of 0.8, and a total of 5 predictors (T. Q. Dang, Tan, et al., 2023; P. Van Nguyen & Nguyen, 2017; Tien, Luan, et al., 2023). Nevertheless, the data analysis was conducted using a total of 204 responses, surpassing the required sample size of 112 samples.

The survey encompassed inquiries pertaining to demographics, as well as critical inquiries regarding the emotional and cognitive impacts of gamification, and the intention to engage in online impulse buying. The study questionnaire underwent translation into the Vietnamese language to cater to the respondents belonging to the Gen Z demographic in Vietnam. The questionnaire utilized in this study is designed to be

contextually adapted, drawing upon previous research findings with Badges Upgrading, Random Rewards, Points adopted from Zhang et al. (2021) and Aparicio et al. (2021) while Affective reactions, Cognitive reactions, and Online impulse buying adopted from Wu et al. (2020) and Koufaris (2002). The participants were asked to rate all items using a seven-point Likert scale, ranging from (1) strongly disagree to (7) strongly agree.

Based on the data collected, it was observed that the proportion of females in the total sample was 58.92%. In relation to the distribution of age, the predominant portion of participants belonged to the 18–24 years old demographic, accounting for 61.89% of the sample. Subsequently, the 24–28 years old cohort constituted 38.11% of the respondents. In relation to individuals' employment status, the majority of respondents consisted of students (62.43%) or individuals who were currently employed (37.57%). Regarding the distribution of income, the majority of respondents (37.57%) reported earning between USD 201 and 400. This was followed by 33.24% of respondents who earned below USD 200, while 29.19% reported earning USD 401 and above. In addition, it was found that 33.24% of the participants indicated a frequent utilization of Shopee services on a daily basis, whereas 50% reported using the services between 6 to 15 times within a month. A significant proportion of participants (57.3%) indicated that they typically allocate a monetary range of USD 50 to 100 for a singular purchase made on the Shopee e-commerce platform.

### 3. Results and Discussion

#### 3.1. Results

##### 3.1.1 Assessing the outer measurement model

Prior to conducting hypothesis testing within the internal model (structural model), it is imperative to assess the validity (convergent and discriminant validity) and reliability (Cronbach's Alpha and composite reliability) of the study. Partial Least Squares Structural Equation Modeling (PLS-SEM) is a statistical technique used to assess the reliability of constructs, specifically internal consistency reliability. In Table 1, the values presented demonstrate that PLS-SEM can conform to the suggested threshold values for Cronbach's Alpha, which is a measure of composite reliability, with a recommended value of 0.70 (Hair et al., 2016). Consequently, all constructions demonstrate a satisfactory level of internal consistency reliability, as assessed through the utilization of Cronbach's Alpha and composite reliability.

The term "convergent validity" pertains to the assessment of numerous conceptually similar entities. Hair et al. (2016) highlighted that the assessment of convergent validity involves the consideration of two key measures: the average variance extracted (AVE) and the values of outer loadings. It is generally accepted that the AVE should exceed 0.50, while the outer loadings should surpass the threshold of 0.70. Table 2 displays the values that are all adjustable to meet the aforementioned requirement. Discriminant validity ensures that the items being examined exhibit strong loadings on the construct of interest, while demonstrating weak loadings on other constructs. Hence, these items can be distinctly distinguished from those of alternative constructions. The Fornell & Larcker's criteria can be utilized to assess the discriminant validity, such as cross loadings and (Fornell & Larcker, 1981; Henseler et al., 2015), which were employed for this purpose. According to the findings presented in Table 2, it is evident that the square root of the average variance extracted (AVE) exhibits a significantly higher value compared to the conventional Fornell-Larcker's criterion.

**Table 1. Outer loadings, Cronbach's Alpha and AVE**

	Outer loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
<b>BU1</b>	0.852	0.805	0.823	0.628
<b>BU2</b>	0.819			
<b>BU3</b>	0.717			
<b>BU4</b>	0.775			
<b>RRE1</b>	0.833	0.802	0.805	0.717
<b>RRE2</b>	0.829			
<b>RRE3</b>	0.877			



<b>PT1</b>	0.794	0.816	0.846	0.639
<b>PT2</b>	0.759			
<b>PT3</b>	0.769			
<b>PT4</b>	0.870			
<b>AR1</b>	0.935	0.887	0.889	0.816
<b>AR2</b>	0.901			
<b>AR3</b>	0.873			
<b>CR1</b>	0.894	0.858	0.878	0.777
<b>CR2</b>	0.902			
<b>CR3</b>	0.848			
<b>OIB1</b>	0.915	0.791	0.793	0.827
<b>OIB2</b>	0.904			

**Table 2. Fornell-Larcker's criterion**

	<b>BU</b>	<b>RRE</b>	<b>PT</b>	<b>AR</b>	<b>CR</b>	<b>OIB</b>
<b>BU</b>	<b>0.793</b>					
<b>RRE</b>	0.634	<b>0.847</b>				
<b>PT</b>	0.668	0.676	<b>0.799</b>			
<b>AR</b>	0.602	0.464	0.620	<b>0.903</b>		
<b>CR</b>	0.401	0.377	0.427	0.494	<b>0.882</b>	
<b>OIB</b>	0.518	0.371	0.525	0.685	0.553	<b>0.909</b>

3.1.2. Assessing the inner structural model

The consideration of the structural model will occur subsequent to the confirmation of the measurement model. The procedure entails the computation of the coefficient of determination (R2) and the direct coefficients from 5000 subsamples through the utilization of a bootstrapping methodology. According to the data presented in Table 3, the evaluation of the structural model involves the testing of hypotheses. The results indicate that both H1a and H1b hypotheses are supported, as evidenced by the statistical significance of the p-value, which is less than 0.05. Therefore, the findings indicate that the implementation of badge upgrades has a beneficial impact on both affective and cognitive responses. However, the statistical analysis indicates that there is insufficient evidence to support the hypotheses H2a and H2b, as the calculated p-values are greater than 0.05. Therefore, the findings from the study on random rewards indicate that they have a negligible adverse impact on both affective and cognitive responses. Additionally, the results provide support for hypotheses H3a and H3b, as indicated by the statistical significance (P < 0.05). Therefore, the findings indicate that the identified factors have a beneficial impact on both emotional and cognitive responses. Furthermore, statistical analysis indicates that there is significant support for H4 and H5, as evidenced by a P value of less than 0.05. Therefore, the findings indicate that both affective and cognitive responses exert a noteworthy positive influence on online impulsive purchasing behavior.

**Table 3. Hypotheses testing results**

Hypotheses	Relationship	Path Coefficients	Standard Deviation	P Values	Decision
<b>H1a</b>	Badges Upgrade (BU) → Affective Reaction (AR)	0.352	0.094	0.000	Supported
<b>H1b</b>	Badges Upgrade (BU) → Cognitive Reactions (CR)	0.175	0.186	0.045	Supported
<b>H2a</b>	Random Rewards (RRE) → Affective Reactions (AR)	-0.035	0.086	0.681	Not Supported
<b>H2b</b>	Random Rewards (RRE) → Cognitive Reactions (CR)	0.104	0.095	0.272	Not Supported
<b>H3a</b>	Points (PT) → Affective Reactions (AR)	0.409	0.095	0.000	Supported

<b>H3b</b>	Points (PT) → Cognitive Reactions (CR)	0.240	0.111	0.030	Supported
<b>H4</b>	Affective Reactions (AR) → Online Impulse Buying (OIB)	0.545	0.073	0.000	Supported
<b>H5</b>	Cognitive Reactions (CR) → Online Impulse Buying (OIB)	0.284	0.082	0.001	Supported

#### 4.2. Discussions

In accordance with the prior research conducted by Zhang et al. (2021), Aparicio et al. (2021), and Bitrián et al. (2021), the inclusion of gamification elements such as Badges upgrade, Random rewards, and Points has been found to exert a favorable influence on individuals' purchasing intentions. These elements possess the potential to serve as stimuli that elicit internal responses within individuals. The findings of this research indicate a significant correlation between gamification and individuals' purchasing intentions, particularly in the context of online impulsive buying. In recent studies conducted by Aparicio et al. (2021), Zhang et al. (2021), Huang et al. (2019), and Hwang & Choi (2020), a correlation has been identified between gamification factors and both personal affective reactions and cognitive reactions. The present study reveals that among the three elements under investigation, namely Badges Upgrade (BU), Points (PT), and an undisclosed third element, only BU and PT demonstrate a statistically significant impact on both affective and cognitive reactions. Specifically, the impact of points on both affective and cognitive aspects is more pronounced ( $\beta = 0.409$ ,  $\beta = 0.240$ ) compared to the influence of badge upgrades ( $\beta = 0.352$ ,  $\beta = 0.175$ ). Conversely, random rewards (RRE) do not have an impact on these internal responses. This demonstrates that customers have the ability to express interest and exert influence in relation to rankings, and subsequently receive rewards such as points, digital currency, and vouchers in return. Regarding the random rewards, customers may not experience a significant level of excitement due to the fact that the value derived from these rewards does not surpass the benefits offered by other elements. The allure of predictable and procedural rewards surpasses that of chance-based outcomes. This study demonstrates that internal reactions can significantly influence individuals' inclination to engage in purchasing behavior. The present study examines the impact of affective factors, specifically emotions, and cognitive factors, specifically the perception of experiences, on customer behavior, with a particular focus on online impulse buying on e-commerce platforms. The affective and cognitive responses of individuals play a significant role in serving as a determining factor for the impact of gamification mechanisms on personal impulse buying behavior (Shahpasandi et al., 2020; Wu et al., 2020; Yu & Huang, 2022). The inclusion of game elements within e-commerce platforms has been found to elicit positive emotions and thoughts among users. These factors play a crucial role in influencing users' decision-making processes, ultimately leading them to make purchases or place orders.

#### 4. Conclusions and Managerial Implications

This study aims to provide Gen Z individuals with a comprehensive understanding of their purchasing perception. The utilization of gamification mechanisms in e-commerce platforms, as well as e-wallet or applications developed by large corporations, serves to alter customers' perceptions and incentivize them to enhance their purchasing capabilities. In light of technological advancements, it is advisable for e-commerce platforms or companies equipped with their own management applications to incorporate a greater range of gamification mechanisms into their operations. Gen Z is characterized by their astute consumer behavior, displaying both a high level of intelligence in making purchases and a propensity for impulsive decision-making. This generation exhibits a tendency to carefully consider their actions in order to maximize personal gain (Accenture, 2017). Hence, it is imperative for e-commerce platforms to offer both services and promotional activities by incorporating gamification elements. Engaging in gaming activities and attaining achievements or economic gains can exert a favorable influence on the psychological and emotional well-being of consumers, particularly those belonging to Gen Z. This, in turn, can elicit a positive reaction towards impulsive purchasing behavior. In addition, it is imperative for website designers to acquire proficiency in supplementary applications in order to enhance the quality of their own applications and foster a user experience that is characterized by approachability and ease of use.

This research investigates and assesses the impact of gamification in e-commerce applications on individual

psychological stimuli, subsequently influencing impulsive purchasing behavior. This study aims to draw the following conclusions: (1) The inclusion of gamification elements has been found to elicit more positive affective and cognitive responses in individuals. However, it should be noted that random rewards do not contribute to this positive effect. (2) The affective and cognitive reactions triggered by gamification elements can potentially influence individuals to engage in impulsive online buying behavior. (3) It is worth mentioning that gamification elements generally have a positive impact on online buying behavior, with the exception of random rewards. Similar to the majority of academic research, this study undeniably possesses certain limitations. The primary focus of this study is exclusively on the Shopee platform in Vietnam. Consequently, there may be limitations in terms of the intention and data pertaining to other e-commerce applications such as Lazada, Tiki, and others. Furthermore, the focus of this study is solely on the Gen Z population in Vietnam, with particular emphasis on those residing in Ho Chi Minh City, including both temporary and permanent residents. Furthermore, it is important to note that the current study has certain limitations, particularly in terms of sample size and sampling method. The use of an online questionnaire as the primary data collection method may have implications for the generalizability of the findings. Therefore, future research should consider incorporating additional variables and employing a larger sample size to enhance the validity and reliability of the results. In this study, it is important to note that the gamification elements examined do not encompass the entirety of the elements present in the Shopee platform. The authors have selectively chosen specific elements that are familiar to users in order to enhance the identification of gamification. However, it is recommended that future research should encompass all the elements and consider incorporating additional constructs to enhance the diversity of research in this area.

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