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# Gamification and Purchase Intention on E-commerce Platforms: The Mediating Role of User Engagement and Moderating Role of Gender

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**ABSTRACT**

The e-commerce industry continues to show significant growth, accompanied by increasingly intense competition among platforms. However, some platforms face challenges such as declining traffic and user engagement, despite maintaining a large market share. This study aims to analyze the effect of gamification on purchase intention, with user engagement as a mediating variable and gender as a moderating variable. The research employs a quantitative approach through an online survey of users engaging with gamification features on e-commerce platforms. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the assistance of SmartPLS 4.0. The results indicate that gamification has a positive and significant effect on user engagement but a negative and significant effect on purchase intention. User engagement has a very strong positive effect on purchase intention and is proven to mediate the relationship between gamification and purchase intention. Meanwhile, gender was not found to moderate this relationship. These findings underscore the importance of user engagement as a key factor driving consumer purchase intention. The study's implications suggest that platform managers should develop gamification strategies that create meaningful engagement integrated with transactional activities to enhance users' purchase intention.

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## INTRODUCTION

The rapid advancement of digital technology has fundamentally transformed consumer purchasing behavior and accelerated the growth of electronic commerce worldwide. As internet penetration and mobile device adoption continue to expand, e-commerce platforms have become an essential component of modern economic activity, enabling consumers to access products

and services conveniently regardless of geographical limitations. Online purchasing behavior continues to increase, with a substantial proportion of consumers regularly conducting transactions through digital platforms (Hostinger, 2025). In Indonesia, the value of e-commerce transactions exceeded IDR 450 trillion in 2023, positioning the country as one of the largest digital markets in Southeast Asia (CNBC Indonesia, 2024). Despite this impressive growth, maintaining sustainable consumer participation has become increasingly challenging due to intensified competition among platforms. This issue is important because user participation directly influences business sustainability, digital economic growth, and consumer welfare. Therefore, understanding the factors that encourage consumers to remain actively engaged and willing to purchase through e-commerce platforms has become a critical concern for both scholars and practitioners.

The growing competition among e-commerce providers has encouraged firms to implement innovative digital marketing strategies designed to create attractive and interactive user experiences. One of the most prominent approaches is gamification, which refers to the application of game-design elements such as points, rewards, badges, challenges, and leaderboards in non-game contexts. The theoretical foundation of gamification is largely derived from Self-Determination Theory, which argues that individuals are motivated when their needs for competence, autonomy, and relatedness are fulfilled. Previous studies have shown that gamification enhances user motivation, participation, and engagement by satisfying users' psychological needs and creating more enjoyable digital experiences (Bitrián et al., 2021; García-Jurado et al., 2021; Kadarisman et al., 2025). Through game-like experiences, e-commerce platforms seek to create emotional connections with users that extend beyond transactional activities. Consequently, gamification has emerged as an important strategic tool for improving consumer experiences and strengthening long-term relationships between users and digital platforms (Munawaroh et al., 2024; Lady et al., 2024; Karkoulia, 2025).

Although gamification has been widely adopted, many e-commerce platforms continue to experience fluctuations in traffic, engagement, and purchase behavior. Recent statistics indicate that major Indonesian e-commerce platforms experienced declining website visits between March and April 2025 despite maintaining large market shares (Goodstats, 2025). Shopee remained the

most visited platform, followed by Tokopedia, Lazada, and Blibli; however, all platforms showed decreasing traffic during the observed period. This trend suggests that attracting visitors alone is insufficient to guarantee sustained consumer participation and purchasing activity. The problem becomes more critical because user engagement is increasingly recognized as a determinant of digital business performance and consumer behavioral outcomes (Jansen et al., 2025; Mubdir et al., 2025; Ismayilzada, 2023). When engagement declines, consumers are less likely to develop favorable attitudes and purchase intentions. Therefore, identifying mechanisms through which gamification contributes to engagement and purchasing outcomes remains an important research issue in contemporary e-commerce environments (Adita et al., 2025; Punwatkar & Verghese, 2025; Lindqvist et al., 2021).

Previous studies have extensively investigated the relationship between gamification and consumer behavior in digital contexts. García-Jurado et al. (2021) reported that gamification significantly increases user engagement by encouraging active participation in online shopping activities. Similarly, Bitrián et al. (2021) found that game elements improve users' motivation and interaction quality within mobile applications. Research conducted by Munawaroh et al. (2024) revealed that gamification positively influences consumers' behavioral intentions in Indonesian digital platforms. Moreover, Lady et al. (2024) demonstrated that gamification affects intention through the formation of positive attitudes toward marketplace applications. Recent evidence also suggests that gamification contributes to customer engagement, brand loyalty, and purchase intention simultaneously (Punwatkar & Verghese, 2025; Saleem et al., 2025). These findings collectively indicate that gamification serves as a valuable mechanism for encouraging consumer participation and improving platform performance. Nevertheless, the direct influence of gamification on purchase intention remains inconsistent across different contexts and user groups.

Several scholars have argued that user engagement may function as an intervening mechanism that explains how gamification ultimately affects purchasing decisions. Adita et al. (2025) found that customer engagement significantly enhances repurchase intentions among online consumers. Likewise, Indriastuti and Ramadhanti (2025) demonstrated that emotional engagement mediates the influence of gamification enjoyment on repurchase intention among

Generation Z consumers. Mavilinda et al. (2024) further reported that user engagement plays a central role in translating digital marketing stimuli into purchase intention. However, existing studies have generally focused on direct effects or simple mediation models, with limited attention to demographic factors that may alter these relationships. Furthermore, evidence regarding the moderating role of gender remains inconclusive. Widjaja et al. (2021), Zhang et al. (2021), and Zhao and Bacao (2021) reported significant gender differences in digital purchasing behavior, whereas other studies found weaker or inconsistent moderating effects. Consequently, the interaction among gamification, user engagement, purchase intention, and gender remains insufficiently understood, particularly within Indonesian e-commerce settings.

This study offers a novel perspective by simultaneously integrating gamification, user engagement, purchase intention, and gender into a comprehensive research framework within the context of Shopee users in Indonesia. Unlike previous studies that primarily emphasized direct relationships between gamification and behavioral outcomes, this research examines the psychological process through which engagement translates gamified experiences into purchasing intentions while also evaluating potential demographic differences. The study contributes to the state of the art by exploring whether engagement acts as the principal mechanism linking gamification to consumer purchase intention and whether this mechanism operates similarly across gender groups. Given the increasingly competitive nature of digital commerce, understanding these relationships is essential for designing more effective and inclusive platform strategies that maximize both user experience and business performance.

Based on the preceding discussion, this study addresses two important research problems. First, it investigates whether gamification influences purchase intention directly or indirectly through user engagement. Second, it examines whether gender strengthens or weakens the relationships among the investigated constructs. It is argued that gamification alone may not be sufficient to stimulate purchase intention unless it generates meaningful engagement that encourages consumers to interact actively with the platform. In this regard, user engagement is expected to serve as a crucial explanatory mechanism connecting gamified experiences with purchasing behavior. Furthermore, gender differences may influence users' responses to gamified features and purchasing decisions,

although the magnitude of this effect remains uncertain. By addressing these issues, the study contributes to theoretical development in digital consumer behavior and provides practical insights for e-commerce managers seeking to develop evidence-based gamification strategies that enhance consumer engagement and purchasing outcomes.

## RESEARCH METHODS

This study used a quantitative approach with a survey method, and falls into the category of causal associative research. The aim was to analyze the causal relationship between the independent variable (Gamification) and the dependent variable (Purchase Intention) using mediation (User Engagement) and a moderator (Gender). This study used data collected through a Google Form questionnaire distributed online through social media.

This questionnaire used a Likert scale with a value range of 1 to 5, consisting of the following categories: strongly agree (5), agree (4), somewhat agree (3), disagree (2), and strongly disagree (1). The target population of this study was individuals who had installed and visited Shopee games. The sampling technique used was non-probability sampling with a purposive sampling method, with the following criteria: 1) minimum age 17 years, 2) gender, 3) domiciled in Indonesia, and 4) having played games on Shopee. Hair et al. (2019) recommend that the minimum sample size for PLS-SEM is 10 times the number of structural paths leading to a single latent construct in the structural model. In this research model, the construct with the most structural paths is Purchase Intention, which receives three paths (Gamification, User Engagement, and Gender), so the minimum sample size is 10 × 3 = 30 respondents. However, to increase statistical power and stability of parameter estimates, the sample size was significantly increased to 200 respondents.

The research instrument was developed based on previous theory and research. The gamification variable indicators were adapted from (Rachman et al., 2023; Ruiz et al., 2024), user engagement refers to the indicators used (Mubdir et al., 2025), and purchase intention was measured using indicators from (Maylandi, 2025; Septiani et al., 2024). Data analysis was performed using SmartPLS version 4.0 using the PLS-SEM method. The analysis was conducted by testing convergent validity through indicators, by testing Variance Extracted (AVE) > 0.5 and outer loadings above 0.7. Then, an R value of 0.75 was tested,

which was considered substantial, 0.50 moderate, and 0.25 weak. Finally, hypothesis testing was conducted with acceptance criteria that the t-statistic value must be > 1.65 and p-value < 0.5. To test the moderating effect of gender, the Moderated Group Analysis (MGA) method was used in PLS-SEM.

## RESULTS AND DISCUSSION

### Results

**Table 1. Respondent Characteristics Table**

| Category | Item | f | % |
|---|---|---|---|
| Gender | Man | 96 | 48 |
| | Woman | 104 | 52 |
| | **Total** | **200** | **100** |
| Age | 17-25 Years | 159 | 79.5 |
| | 26-35 Years | 36 | 18.0 |
| | 36-45 Years | 5 | 2.5 |
| | **Total** | **200** | **100** |
| Domicile | Kalimantan | 121 | 60.5 |
| | Java | 53 | 26.5 |
| | Sumatra | 9 | 4.5 |
| | Sulawesi | 7 | 3.5 |
| | Bali / NTB / NTT | 8 | 4.0 |
| | Papua / Maluku | 2 | 1.0 |
| | **Total** | **200** | **100** |
| **Category** | **Item** | **f** | **%** |
| Work | Students | 145 | 72.5 |
| | Private sector employee | 19 | 9.5 |
| | civil servant | 19 | 9.5 |
| | Self-employed | 14 | 7.0 |
| | Teacher | 2 | 1.0 |
| | Influencer | 1 | 0.5 |
| | **Total** | **200** | **100** |
| Last education | High School / Vocational School / Equivalent | 142 | 71.4 |
| | Diploma (D1/D2/D3/D4) | 16 | 8.0 |
| | Bachelor degree) | 41 | 20.6 |
| | **Total** | **200** | **100** |

Source: Primary Data, processed by researchers (2026)

Based on Table 1, demographic analysis shows that respondents were predominantly female (52%), as females tend to be more active in online surveys and more sensitive to shopping behavior on digital platforms. The majority of respondents were aged 17–25 years (79.5%), which is identical to the highly

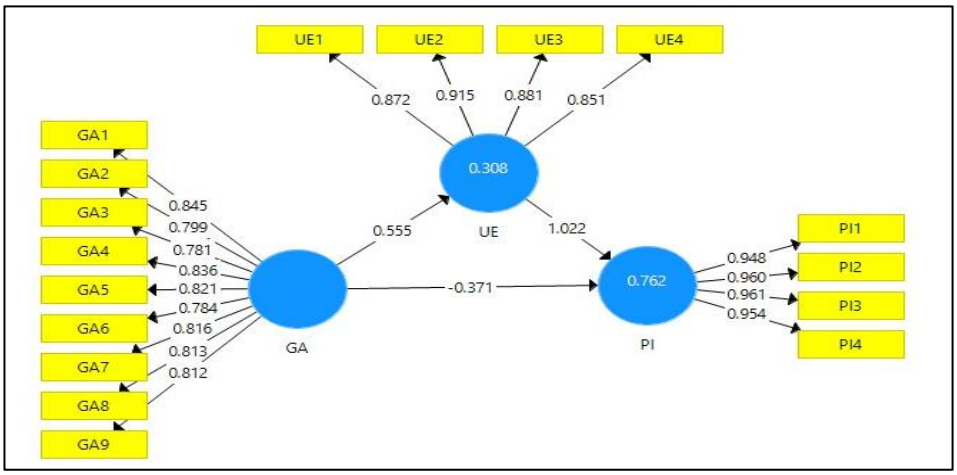
digitally active Generation Z. In terms of domicile, the largest number of respondents came from Kalimantan (60.5%), influenced by the intensity of survey distribution in the region. In the occupation and education categories, the majority were students (72.5%) with a high school/vocational high school/equivalent educational background (71.4%), which is consistent with the young age profile that dominates the sample. Overall, this demographic profile describes respondents who are predominantly young, digitally active, and responsive to platform dynamics, making it relevant to the context of research on consumer behavior.

**Table 2. Covergent Validity and Composite Reliability Table**

| Variables | Items | Loading Factor | Cronbach's Alpha | CR | AVE |
|---|---|---|---|---|---|
| Gamification | GA1 | 0.845 | 0.936 | 0.946 | 0.660 |
| | GA2 | 0.799 | | | |
| | GA3 | 0.781 | | | |
| | GA4 | 0.836 | | | |
| | GA5 | 0.821 | | | |
| | GA6 | 0.784 | | | |
| | GA7 | 0.816 | | | |
| | GA8 | 0.813 | | | |
| | GA9 | 0.812 | | | |
| User Engagement | UE1 | 0.872 | 0.968 | 0.977 | 0.913 |
| | UE2 | 0.915 | | | |
| | UE3 | 0.881 | | | |
| | UE4 | 0.851 | | | |
| Purchase Intention | PI1 | 0.948 | 0.903 | 0.932 | 0.774 |
| | PI2 | 0.960 | | | |
| | PI3 | 0.961 | | | |
| | PI4 | 0.954 | | | |

Source: Primary Data, processed by researchers (2026)

Based on Table 2, the results of the validity and reliability tests indicate that the indicators in the constructed model have met the criteria for validity and reliability. All tested indicators have standardized loading factor (SLF) values above (>) 0.5. This indicates that all indicators can be said to be valid and adequate to measure the constructs in the entire resulting model. The Construct Reliability (CR) test value is also above (>) 0.7. Overall, these results indicate that all variables in the model have met the criteria for a good measurement model, making it suitable for use in the next stage of structural analysis.




Source: Primary Data, processed by researchers (2026)

**Figure 1. Algorithm Model Result Image**

Figure 1 illustrates the PLS-SEM model showing the relationships among Gamification (GA), User Engagement (UE), and Purchase Intention (PI). All indicators demonstrate strong outer loadings above 0.70, confirming convergent validity, with GA indicators ranging from 0.781 to 0.845, UE from 0.851 to 0.915, and PI from 0.948 to 0.961. The structural paths indicate that Gamification positively affects User Engagement ($\beta = 0.555$) but negatively impacts Purchase Intention ($\beta = -0.371$), while User Engagement strongly drives Purchase Intention ($\beta = 1.022$). The model explains 30.8% of the variance in User Engagement ($R^2 = 0.308$) and 76.2% of the variance in Purchase Intention ($R^2 = 0.762$), highlighting that user engagement is a critical mechanism linking gamification to purchase behavior on e-commerce platforms.

**Table 3. Discriminant Validity Table -Fornell Lacker**

| | Gamification | Purchase Intention | User Engagement |
|---|---|---|---|
| **Gamification** | | | |
| Purchase Intention | 0.193 | | |
| User Engagement | 0.591 | 0.873 | |

Source: Primary Data, processed by researchers (2026)

Based on Table 3, the results of the discriminant validity test using the Fornell-Larcker approach indicate that the square root mean value for each construct is higher than the correlation value between the other constructs. This indicates that each construct has a stronger ability to explain the variance of its own indicator compared to the variance explained by the other constructs. Thus, all constructs in this research model have met the requirements. discriminant validity criteria based on the Fornell-Larcker approach and can be clearly distinguished in the structural model.

**Table 4. R-Square Table**

| | R-square | R-square adjusted |
|---|---|---|
| PI | 0.762 | 0.759 |
| EU | 0.308 | 0.305 |

Source: Primary Data, processed by researchers (2026)

As shown in Table 4, the R-square values indicate the explanatory power of the structural model for each dependent variable. For user engagement (UE), the R- square value of 0.308 indicates that 30.8% of UE variation can be explained by the predictor variables in the model, with an adjusted R - Square value of 0.305 confirming the stability of the model after adjusting the number of predictors. Meanwhile, purchase intention (PI) has a much higher R - Square value, namely 0.762, which means that 76.2% of the variation in purchase intention can be explained by the variables that influence it, and the adjusted value of 0.759 indicates that the model has strong predictive ability and remains consistent after adjustment. Overall, these results show that the model is stronger in predicting purchase intention than user engagement.

**Table 5. Hypothesis Testing**

| | Path | Original sample (O) | Sample mean (M) | Standard deviation (STDEV) | T statistics | P values | Results |
|---|---|---|---|---|---|---|---|
| **H 1** | Gamification →Purchase Intention | -0.371 | -0.367 | 0.080 | 4,658 | 0.000 | Accepted |
| **H 2** | Gamification →User Engagement | 0.555 | 0.560 | 0.034 | 16,281 | 0.000 | Accepted |
| **H 3** | User Engagement →Purchase Intention | 1,022 | 1,023 | 0.032 | 31,887 | 0.000 | Accepted |
| **H 4** | Gamification →User Engagement →Purchase Intention | 0.568 | 0.574 | 0.048 | 11,741 | 0.000 | Accepted |

Source: Primary Data, processed by researchers (2026)

As presented in Table 5, gamification (GA) has a significant negative effect on purchase intention (PI) (p = 0.000), indicating that higher levels of gamification implementation are associated with lower purchase intention among users. However, gamification (GA) has a significant positive effect on user engagement (UE) (p = 0.000), indicating that the implementation of gamification can significantly increase user engagement. Furthermore, user engagement (UE) has

a positive and significant effect on purchase intention (PI) (p = 0.000). In addition, there is a significant mediation effect: (GA) mediated by (UE) on (PI) (p = 0.000), indicating that user engagement is an important mediator in explaining how gamification affects purchase intention. Thus, although gamification does not have a direct impact on purchase intention, its indirect effect through user engagement is proven to be significant.

**Table 6. Multi- Group Analysis (MGA)**

| Path | β Male | β Female | P-values Male | P-values Female | Result |
|---|---|---|---|---|---|
| Gamification →Purchase Intention | -0.404 | -0.330 | 0.001 | 0.001 | Not significantly different |
| Gamification → User Engagement | 0.556 | 0.592 | 0.000 | 0.000 | Not significantly different |
| User Engagement →Purchase Intention | 0.998 | 1,047 | 0.000 | 0.000 | Not significantly different |

Source: Primary Data, processed by researchers (2026)

Table 6 shows that the relationship between gamification (GA) and purchase intention (PI) does not have a significant difference based on gender. However, the path coefficient for men (β = -0.404) is slightly higher than for women (β = -0.330). Although the difference is not statistically significant, this finding suggests a tendency that gamification implementation among male respondents has a relatively stronger association with purchase intention. However, on the other hand, the path test of the relationship between gamification (GA) and user engagement (UE) does not have a significant difference based on gender, but in the coefficient value, female gender is slightly higher (β = 0.592) than men (β = 0.556), which indicates a tendency that the implementation of gamification in female respondents has a relatively stronger association with user engagement. Likewise, testing the relationship path between user engagement (UE) and purchase intention (PI) showed no significant differences based on gender, but in terms of the coefficient value, female gender was slightly higher (β = 1.047) than male gender (β = 0.998).

**Table 7. Hypothesis Testing (MGA)**

| | Path | Result | Decision |
|---|---|---|---|
| **H 5a** | Gamification → Purchase Intention | Not significant | Not proven |
| **H 5b** | Gamification → User Engagement | Not significant | Not proven |
| **H 5c** | User Engagement → Purchase Intention | Not significant | Not proven |

Source: Primary Data, processed by researchers (2026)

Table 7 shows that there is no significant difference in the influence of gamification on user engagement and purchase intention, as well as in the influence of user engagement on purchase intention, based on gender. The path coefficient values for each gender group show relatively similar patterns, and the

differences between groups are not statistically significant. Thus, hypotheses H5a, H5b, and H5c are supported. which states that there are differences in influence based on gender not empirically supported. This finding indicates that the influence of gamification on user engagement and purchase intention is consistent in male and female respondents.

**Discussion**

The results of this study provide several important empirical findings that contribute to the development of digital marketing literature and gamification - based e-commerce practices. The test results show that gamification has a positive and significant effect on user engagement, so H2 is accepted. This finding indicates that the implementation of gamification elements such as a points system, rewards, daily missions, and leaderboards can increase user engagement cognitively, emotionally, and behaviorally. These results are consistent with research by Bitrián et al., (2021); García-Jurado et al., (2021) , and are reinforced by the recent findings of Adita et al., (2023); Indriastuti, (2025) which confirm that the attractiveness and fun in gamification increase user engagement on the platform. digital. In contrast to the initial hypothesis, the results of the study show that gamification has a negative and significant effect on purchase intention, so H1 is accepted with the opposite direction of the relationship. This finding indicates that gamification activities do not automatically encourage user purchase intention, but rather have the potential to divert user focus from playing activities. This finding is in line with Andyani & Halim, (2025); Ruiz et al., (2024) who stated that the influence of gamification on purchase intention is highly dependent on the integration between game features and transaction benefits.

Furthermore, the results of the study indicate that user engagement has a positive and very strong effect on purchase intention, so H3 is accepted. This finding confirms that user engagement is a major determinant in driving purchase intention on e-commerce platforms. This result is consistent with Castiblanco Jimenez et al., (2023); Mavilinda et al., (2024) , and is reinforced by Saleem, (2025) who emphasize the role of engagement as a link between digital experiences and purchasing decisions. The test results also show that user engagement significantly mediates the effect of gamification on purchase intention, so H4 is accepted. This finding indicates that gamification will only be effective in driving purchase intention if it is able to create meaningful user engagement. This finding is in line with Adita et al., (2023); Punwatkar & Verghese, (2025) who emphasize that engagement plays a key psychological mechanism in converting gaming experiences into purchasing behavior.

The results of the Multi-Group Analysis (MGA) analysis show that gender does not significantly moderate the influence of gamification on user engagement or purchase intention, so that H 5a, H 5b and H5c was not proven. This finding

indicates that male and female users' responses to Shopee gamification are relatively similar. This result differs from Widjaja et al., (2021); Zhang et al., (2021) who found differences in responses based on gender. However, this study's findings align with recent research by Yassien et al., (2025) which states that on mass-market digital platforms, gender differences tend to weaken due to the homogenization of system design and user experience. Thus, the effectiveness of gamification is determined more by the quality of the experience than by gender demographic characteristics.

## CONCLUSION

This study demonstrates that the most important insight is that gamification alone is insufficient to increase consumers' purchase intention unless it successfully generates meaningful user engagement. While gamification features such as points, rewards, daily missions, and leaderboards significantly enhance user engagement by fulfilling users' psychological needs, their direct influence on purchase intention may be limited or even negative when they are not closely connected to transactional activities. The findings highlight that user engagement serves as the primary mechanism through which gamification translates into purchasing intentions, emphasizing the importance of fostering active and meaningful user participation rather than merely providing entertainment-oriented features. From a theoretical perspective, this study contributes to the literature by extending the application of Self-Determination Theory and Uses and Gratifications Theory within the context of digital consumer behavior and e-commerce, while also providing empirical evidence regarding the mediating role of user engagement and the non-significant moderating effect of gender. Nevertheless, this study is limited by its cross-sectional design and focus on a single e-commerce platform, which may restrict the generalizability of the findings. Future research is encouraged to employ longitudinal approaches, examine multiple e-commerce platforms, incorporate additional psychological and behavioral variables, and explore cultural or demographic factors that may further explain consumer responses to gamification strategies.

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