JEMI (Jurnal Ekonomi dan Manajemen Indonesia)
Vol. 26 No.1 Juni 2026, Hal 16-30
ISSN : 1411-9560, E-ISSN:2775-7129

GAMIFICATION AND CUSTOMER LOYALTY: THE MEDIATING ROLE OF USER ENGAGEMENT AMONG SHOPEE USERS IN INDONESIA

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Submitted: 10 Mei 2026 | Accepted: 25 Mei 2026| Published: 01 Juni 2026

Abstract

This study investigates how gamification features implemented in Shopee influence customer loyalty through the mediating role of user engagement among Indonesian users. A quantitative approach was applied using survey questionnaires distributed to 200 respondents selected through purposive sampling. Data were analyzed using SmartPLS 4 to evaluate construct reliability, assess validity, and investigate the relationships among the variables. The results demonstrate that gamification exerts a positive and statistically significant influence on customer loyalty, with a coefficient value of 0.435, and also positively affects user engagement with a coefficient value of 0.672. In addition, user engagement was found to have a positive and significant impact on customer loyalty, reflected by a coefficient value of 0.435. The indirect effect assessment reveals that user engagement partially mediates the association between gamification and customer loyalty, as indicated by a coefficient value of 0.292. Moreover, the coefficient of determination (R^2) demonstrates that the proposed model accounts for 63.3% of the variance in customer loyalty and 45.2% of the variance in user engagement. Overall, these findings highlight the substantial contribution of gamification in fostering user engagement and improving customer loyalty among Shopee users in Indonesia.

Keywords: ***Customer Loyalty; E-Commerce; Gamification; Shopee; User Engagement***

INTRODUCTION

The emergence of e-commerce has become an increasingly dominant digital business model in recent years. E-commerce enables transactions to be conducted online without limitations of time and space, thereby providing convenience for consumers in fulfilling their needs. Along with rapid technological advancement, consumers increasingly rely on digital platforms for shopping activities because of their efficiency and accessibility. In recent years, e-commerce has not only functioned as a distribution channel but has also evolved into a digital ecosystem integrating various interactive features to enhance user experience (Garcia-Jurado et al., 2021). This transformation has encouraged companies to continuously innovate in order to attract and retain consumers in highly competitive digital markets.

In Indonesia, the growth of e-commerce has shown a highly significant trend alongside increasing internet penetration and digital technology adoption. The increasing number of smartphone users and improvements in digital payment systems have accelerated online shopping behavior among Indonesian consumers. Indonesia has even become one of the countries with the largest digital economy values in Southeast Asia, indicating the high level of online transaction activities among the public. This condition encourages e-commerce

companies to continuously innovate in retaining users and increasing competitiveness in the digital market (Salsabila et al., 2025). As competition among platforms intensifies, companies are required to develop more engaging strategies to maintain customer interest and loyalty.

One of the e-commerce platforms dominating the Indonesian market is Shopee. The platform has successfully gained strong consumer attention by offering various interactive and user-oriented features designed to improve shopping experiences. Shopee consistently competes with other major e-commerce platforms by implementing innovative digital marketing strategies and attractive promotional programs. The platform successfully occupies the top position in terms of user visits compared to its competitors, reaching 53.22% (Yonatan, 2025). This achievement indicates that Shopee has been successful in maintaining its market position and strengthening customer engagement within Indonesia's rapidly growing digital commerce industry.

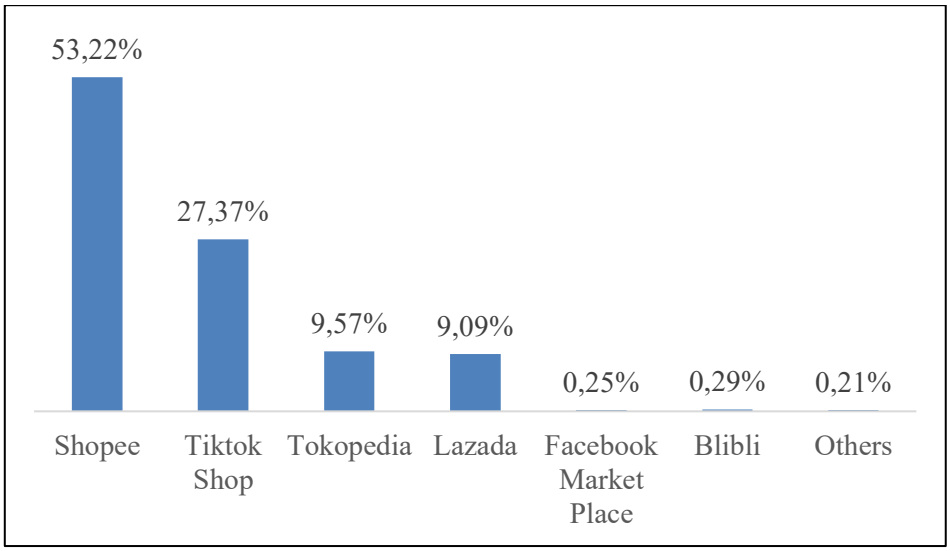

Figure 1. The most e-commerce frequently visited in 2025

Source: Internet survey APJII 2025

This advantage cannot be separated from the innovative strategies implemented by the platform, one of which is the integration of gamification concepts to increase user interaction. Shopee actively implements various gamification features such as games, rewards, and challenges to create a more engaging shopping experience (Halim & Purwanegara, 2024). Gamification itself refers to the application of game elements in non-game contexts aimed at increasing user motivation and participation. In e-commerce environments, the application of gamification aims to improve user experience by fostering higher levels of interaction and participation among platform users. Previous studies have shown that gamification can enhance user motivation through elements such as rewards, challenges, and competition (Xi & Hamari, 2020).

In addition, gamification also plays an important role in increasing user engagement. User engagement is a key factor in determining the success of digital platforms because it reflects active interaction between users and the system. Research indicates that gamification can improve engagement through the fulfillment of users' psychological needs such as competence, autonomy, and relatedness (Bitrián et al., 2021). Users who feel actively involved with a

platform are more likely to develop emotional attachment and stronger relationships with the services provided. Furthermore, user engagement has a close relationship with customer loyalty. Customer loyalty is an important indicator of business sustainability because loyal customers tend to make repeat purchases and recommend the platform to others. In the context of e-commerce, user engagement has been proven to increase loyalty through more personalized and interactive experiences (Roy et al., 2023).

Previous studies have demonstrated that gamification has a positive and significant influence on customer loyalty and customer experience in e-commerce platforms. The implementation of gamification in e-commerce platforms was shown to improve both customer experience and customer loyalty. Moreover, customer satisfaction played a mediating role in reinforcing the association between gamification and loyalty, highlighting the importance of psychological factors in maintaining loyal customer behavior (Rachmadanty et al., 2025). In addition, gamification was found to have a strong influence on system usage and repurchase intention, with previous models explaining a substantial proportion of the variance in repurchase behavior (Aparicio et al., 2021). These findings indicate that gamification is capable of encouraging users to become more actively involved in digital platforms, although several previous studies still focused primarily on usage behavior rather than long-term customer loyalty formation.

Furthermore, previous research found that gamification design significantly affected engagement and purchase behavior, with stronger effects observed among hardcore users compared to casual users (Dwijaputra et al., 2025). Gamification affordances were also shown to positively influence user engagement and retention, where engagement acted as an important mediating variable in digital platform usage (Zhang et al., 2023). In the context of live-streaming e-commerce, gamification increased engagement and purchase intention through mediating variables such as sense of presence, although immersion did not demonstrate a significant effect (Fayola et al., 2024). Other studies also revealed that gamification indirectly influenced customer loyalty through hedonic value, utilitarian value, and satisfaction, although inconsistencies were still found in the relationships between these variables and customer loyalty (Zega et al., 2025).

Additionally, gamification was found to positively affect satisfaction, engagement, and retention, although some findings showed that satisfaction did not significantly influence retention, indicating inconsistencies in the formation of loyalty and retention behavior (Liu et al., 2024). Previous studies also revealed that gamification influenced purchase decisions, which subsequently strengthened customer loyalty (Sumarmi et al., 2025). Although most studies confirmed the positive role of gamification in digital platforms, inconsistencies remain regarding the direct and indirect effects of gamification on customer loyalty. Moreover, prior studies have used different mediating variables and research contexts, resulting in limited understanding of how user engagement specifically mediates the relationship between gamification and customer loyalty in e-commerce settings. Therefore, further research is needed to provide a more comprehensive explanation of the relationship between gamification, user engagement, and customer loyalty, particularly in the context of Shopee users in Indonesia.

METHODS

This study employed a descriptive research design with a quantitative approach to analyze the effect of gamification on customer loyalty, with user engagement serving as a mediating variable among Shopee users in Indonesia. The population consisted of active Shopee users who had experience using gamification features within the application. Since the exact population size could not be identified, this study applied purposive sampling by selecting respondents who met predetermined criteria. Data were collected through online questionnaire distribution using a Likert scale as the measurement instrument. Referring to the SEM-PLS sample size approach proposed by Kock & Hadaya (2018), the minimum required sample size was 155 respondents; therefore, this study involved 200 respondents, which was considered sufficient for analysis. After the data had been collected, the analysis was conducted using the Structural Equation Modeling (SEM) method with the Partial Least Squares (PLS) technique supported by SmartPLS 4 software. This method is widely considered suitable for evaluating complex research frameworks due to its flexibility and its ability to operate without strict data distribution requirements (Sugiyono, 2019).

Operational variables in this study consisted of Gamification (X), User Engagement (M), and Customer Loyalty (Y). Gamification was measured through indicators including reward attractiveness, reward motivation, challenge, achievement, fun/enjoyment, entertainment, competition, point or coin systems, and usage activity, which reflect users' experiences and interactions with gamification features in e-commerce platforms (Aparicio et al., 2021; Garcia-Jurado et al., 2021; Halim & Purwanegara, 2024; Xi & Hamari, 2020). User Engagement was measured using indicators such as frequency of use, usage energy, interest, emotional engagement, time intensity, usage focus, and attachment, which describe users' cognitive, emotional, and behavioral involvement with the platform (Bitrián et al., 2021; Roy et al., 2023; Zhang et al., 2023). Meanwhile, Customer Loyalty was measured through reuse intention, repurchase behavior, preference, recommendation, word of mouth, and primary choice, reflecting users' commitment and tendency to continuously use and recommend the platform to others (Aparicio et al., 2021; Rachmadanty et al., 2025; Sumarmi et al., 2025; Zega et al., 2025). All variables were measured using a Likert scale to assess respondents' perceptions regarding the implementation of gamification, user engagement, and customer loyalty among Shopee users in Indonesia.

Data analysis is the process of examining and processing research data to produce meaningful information (Priadana & Sunarsi, 2021). In this study, data analysis and hypothesis testing were conducted using Structural Equation Modeling (SEM) based on Partial Least Squares (PLS) with the assistance of SmartPLS 4. SEM is a multivariate analysis technique used to analyze relationships among latent variables simultaneously (Robi et al., 2017), while PLS-SEM was selected because it is suitable for complex models, relatively small sample sizes, and data without strict normality assumptions (Changalima & Chuwa, 2026). The analysis included the evaluation of the measurement model (outer model) to assess validity and reliability, as well as the structural model (inner model) to examine relationships among variables and the mediating role of user engagement between gamification and customer loyalty.

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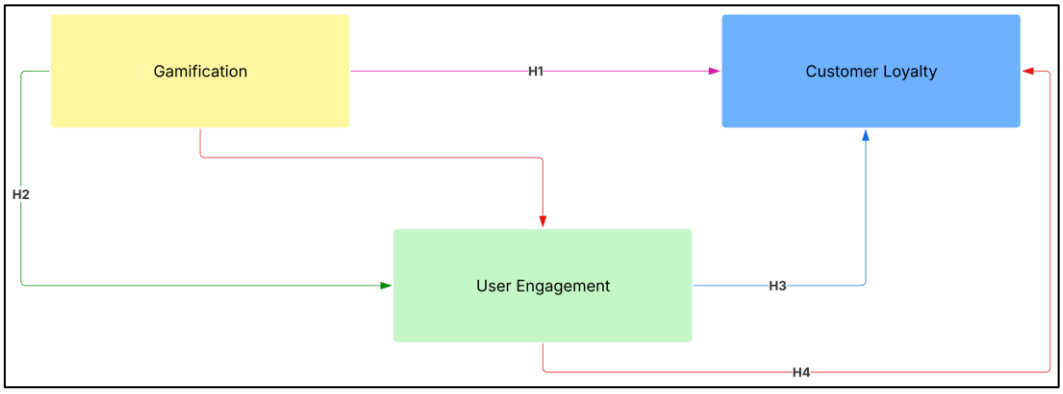

Figure 2. Research Framework

Source: Research Data 2026

Hypotheses

A hypothesis is a temporary assumption formulated based on an initial understanding of a particular problem or phenomenon. Therefore, further analysis was conducted on the hypotheses formulated as follows:

1. **H1:** The use of gamification features is expected to strengthen customer loyalty toward e-commerce platforms.
2. **H2:** Gamification practices are predicted to increase user engagement in digital shopping activities.
3. **H3:** User engagement is expected to contribute positively to customer loyalty.
4. **H4:** User engagement is proposed to mediate the influence of gamification on customer loyalty.

RESEARCH RESULTS AND DISCUSSION

The research findings are organized into two analytical phases, namely the feasibility analysis stage and the hypothesis examination stage.

Outer Model

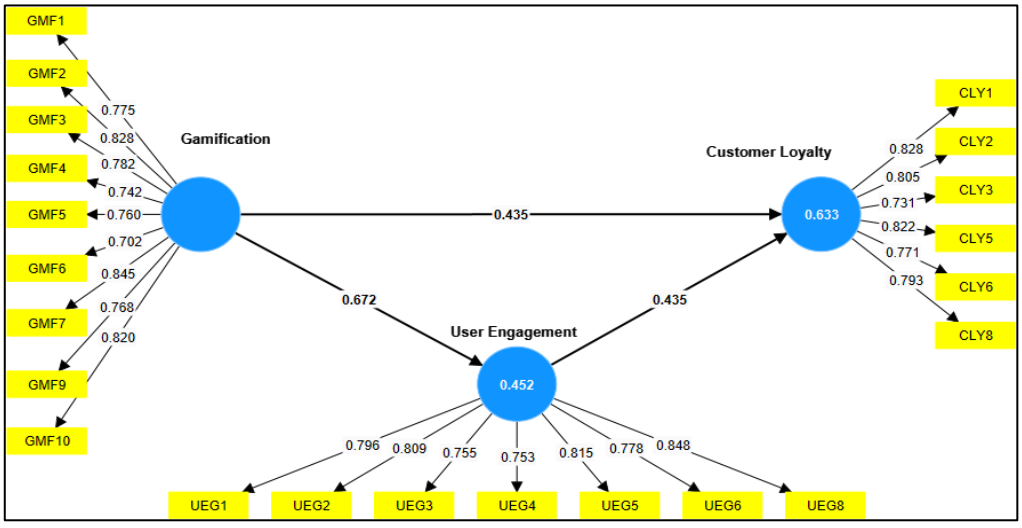

Figure 3. Latent Variable Model of the Study

Source: Output SmartPLS 4

Convergent Validity Assessment

Convergent validity evaluation was carried out by analyzing the loading factor values of each indicator together with the Average Variance Extracted (AVE). Both measurements were utilized to determine the extent to which the indicators adequately reflected their corresponding latent variables.

Loading Factor

Table 1. Outer Loading Convergent Validity Test

Instrument	Customer Loyalty	Gamification	User Engagement	Description
CLY1	0.828			Valid
CLY2	0.805			Valid
CLY3	0.731			Valid
CLY5	0.822			Valid
CLY6	0.771			Valid
CLY8	0.793			Valid
GMF1		0.775		Valid
GMF10		0.820		Valid
GMF2		0.828		Valid
GMF3		0.782		Valid
GMF4		0.742		Valid
GMF5		0.760		Valid
GMF6		0.702		Valid
GMF7		0.845		Valid
GMF9		0.768		Valid
UEG1			0.796	Valid
UEG2			0.809	Valid
UEG3			0.755	Valid
UEG4			0.753	Valid
UEG5			0.815	Valid
UEG6			0.778	Valid
UEG8			0.848	Valid

Source: Output SmartPLS 4

The findings from the second-order loading assessment reveal that every indicator within the Gamification, User Engagement, and Customer Loyalty constructs met the acceptable loading criterion of above 0.70. Therefore, the indicators can be considered appropriate for representing the latent constructs and strengthening the construct validity of the model (Wiyono, 2020).

Average Variance Extracted (AVE)

Table 2. Results of the Convergent Validity Test

Construct	AVE Score	Interpretation
Customer Loyalty	0.628	Valid
Gamification	0.610	Valid
User Engagement	0.631	Valid

Source: Output SmartPLS 4

The AVE values for each variable are as follows: Customer Loyalty = 0.628, Gamification = 0.610 and User Engagement = 0.631. All variables have AVE values ≥ 0.50, indicating that these variables are categorized as valid (Haryono, 2016).

Discriminant Validity

Discriminant validity refers to the ability of each construct in a measurement model to explain a specific concept independently without overlapping with other constructs. A valid model should demonstrate clear distinctions among variables. To evaluate this aspect, the study applied cross-loading testing, the Fornell–Larcker criterion, and correlation analysis among latent variables.

Cross loading

Table 3. Results of Discriminant Validity Test (Cross Loading)

Instrument	Customer Loyalty	Gamification	User Engagement	Description
CLY1	**0,828**	0,606	0,581	Valid
CLY2	**0,805**	0,616	0,644	Valid
CLY3	**0,731**	0,540	0,476	Valid
CLY5	**0,822**	0,585	0,569	Valid
CLY6	**0,771**	0,534	0,592	Valid
CLY8	**0,793**	0,572	0,583	Valid
GMF1	0,591	**0,775**	0,514	Valid
GMF10	0,653	**0,820**	0,556	Valid
GMF2	0,655	**0,828**	0,636	Valid
GMF3	0,562	**0,782**	0,507	Valid
GMF4	0,522	**0,742**	0,478	Valid
GMF5	0,478	**0,760**	0,502	Valid
GMF6	0,535	**0,702**	0,475	Valid
GMF7	0,558	**0,845**	0,524	Valid
GMF9	0,528	**0,768**	0,509	Valid
UEG1	0,623	0,565	**0,796**	Valid
UEG2	0,574	0,519	**0,809**	Valid
UEG3	0,528	0,514	**0,755**	Valid
UEG4	0,517	0,549	**0,753**	Valid
UEG5	0,576	0,571	**0,815**	Valid
UEG6	0,572	0,457	**0,778**	Valid
UEG8	0,644	0,556	**0,848**	Valid

Source: Output SmartPLS 4

The cross-loading values for the Gamification, User Engagement, and Customer Loyalty variables indicate that the correlation values between indicators and their respective constructs are higher than the correlations with other constructs. The findings from both convergent and discriminant validity evaluations confirm that all indicators satisfy the validity requirements. These results suggest that the proposed model exhibits an adequate level of fit and is capable of clearly differentiating among the examined constructs. Accordingly, the measurement instrument applied in this research can be considered valid (Wiyono, 2020).

Latent variable correlation

Table 4. Results of Latent Variable Correlation

Variable	Customer Loyalty	Gamification	User Engagement	AVE	√AVE	Desc.
Customer Loyalty	1,000	**0,727**	**0,727**	0,628	**0,794**	Valid
Gamification	**0,727**	1,000	**0,672**	0,610	**0,781**	Valid
User Engagement	**0,727**	**0,672**	1,000	0,631	**0,794**	Valid

Source: Output SmartPLS 4

Discriminant validity among latent variables can be assessed by comparing the square root of the Average Variance Extracted (√AVE) with the correlation values between constructs within the same row or column. Discriminant validity is considered satisfactory when the √AVE value exceeds the inter-construct correlation values (Hamid & Anwar, 2019). Based on the analysis results, all variables in this study meet the required criteria for discriminant validity.

Fornell-Larcker

Table 5. Fornell-Larcker

Variable	Customer Loyalty	Gamification	User Engagement	Desc.
Customer Loyalty	**0.792**			Valid
Gamification	0.727	**0.781**		Valid
User Engagement	0.727	0.672	**0.794**	Valid

Source: Output SmartPLS 4

Based on the Fornell–Larcker assessment, every construct demonstrates stronger correlations with its own indicators compared to correlations with other constructs. This finding confirms that all research variables achieved adequate discriminant validity (Savitri, 2021).

Construct Reliability

Construct reliability can be analyzed using Cronbach's Alpha and Composite Reliability. In this study, Cronbach's Alpha was used to evaluate the reliability of indicators within each construct.

Table 6. Cronbach's Alpha

Variable	Cronbach's alpha	Desc.
Customer Loyalty	0,881	Reliable
Gamification	0,920	Reliable
User Engagement	0,902	Reliable

Source: Output SmartPLS 4

The results indicate that the Cronbach's Alpha values are as follows: Customer Loyalty = 0.881, Gamification = 0.920 and variable User Engagement = 0.902. All Cronbach's Alpha values are greater than or equal to 0.70, indicating that all variables have good reliability (Savitri, 2021).

Model Fit Evaluation

Model fit evaluation was performed by analyzing the SmartPLS 4 output results and assessing them against the recommended fit criteria.

Table 7. Results of Model Fit Test

Parameter	Rule of Thumb	Estimated model	Desc.
SRMR	< 0.10	0,050	Fit
d_ULS	> 0,05	0,638	Fit
d_G	> 0,05	0,271	Fit
Chi-square	χ^2 Statistics ≥ χ^2 table	295,039 ≥ 32,671	Fit
NFI	close to 1 (one)	0,895	Fit
GoF	0.1 (GOF weak), 0.25 (GOF moderate), 0.36 (GOF strong)	0,579	Fit
Q^2 Predictive Relevance	Q^2 > 0: Demonstrates predictive relevance Q^2 < 0: Demonstrates low predictive relevance . 0.02 (weak) 0.15 (moderate) 0.35 (strong)	Q2 Customer Loyalty 0.521 > 0 Q2 User Engagement 0.444 > 0	Fit

Source: Output SmartPLS 4

The overall model assessment confirms that the proposed framework meets the required fit criteria, indicating that the model can effectively explain the relationships among the latent constructs and provide reliable predictive performance.

Inner Structural Analysis

The inner structural model analysis was conducted to examine the associations between latent constructs and evaluate the magnitude of the proposed relationships. The assessment included hypothesis testing, analysis of the coefficient of determination (R^2), as well as effect size evaluation.

Coefficient of Determination (R^2)

Table 8. R^2 Evaluation Results

Research Construct	R-square	R-square adjusted
Customer Loyalty	0.633	0.629
User Engagement	0.452	0.449

Source: Output SmartPLS 4

The analysis produced an R-Square value of 0.633 for Customer Loyalty, which means that 63.3% of the variance in Customer Loyalty can be accounted for by the independent variables incorporated in the research model, while the remaining 36.7% is influenced by other factors outside the model. Therefore, the association between the independent variables and Customer Loyalty is considered strong.

The structural model produced an R^2 score of 0.452 for the User Engagement construct. This result reflects that the proposed variables contribute substantially to explaining user engagement, although additional external factors may also influence the construct.

Hypothesis Testing Results

In PLS-SEM analysis, hypothesis testing is conducted to evaluate the significance of the relationships among latent constructs. The bootstrapping procedure was applied to obtain path coefficient estimates, t-statistics, and p-values. A relationship was considered significant when the p-value was below 0.05, indicating support for the proposed hypotheses.

Bootstrapping Results for Direct Effects

Table 9. Path Coefficient Bootstrapping Direct Effect

Hypothesized Relationship	Path Estimate	Average Estimate	Deviation Value	T statistics	P-values	Result
Gamification -> Customer Loyalty	0,435	0,435	0,062	6,999	0,000	Accepted
Gamification -> User Engagement	0,672	0,676	0,040	16,630	0,000	Accepted
User Engagement -> Customer Loyalty	0,435	0,436	0,059	7,398	0,000	Accepted

Source: Output SmartPLS 4

The Relationship between Gamification and Customer Loyalty

The analysis results demonstrate that the relationship between Gamification and Customer Loyalty yielded a path coefficient of 0.435, with a t-statistic of 6.999 and a p-value of 0.000. This indicates that gamification has a positive and statistically significant impact on customer loyalty among Shopee users. These findings suggest that the implementation of interactive features such as rewards, challenges, points, and entertainment elements can encourage users to continuously use the platform and strengthen their loyalty toward Shopee. Gamification creates more enjoyable and engaging shopping experiences, which can increase users' emotional attachment and stimulate repeat purchasing behavior. This result is consistent with previous studies conducted by Rachmadanty et al. (2025) and Sumarmi et al. (2025), which found that gamification positively contributes to customer loyalty through enhanced user experiences and purchasing decisions. Furthermore, the findings also support the study by Zega et al. (2025), which emphasized that gamification can strengthen loyalty through psychological and experiential values perceived by users. Therefore, the findings of this study confirm that gamification is not only an entertainment feature but also an important strategic tool for building long-term customer loyalty in e-commerce platforms.

The Relationship between Gamification and User Engagement

The structural model analysis indicates that the association between Gamification and User Engagement produced a path coefficient of 0.672, with a t-statistic of 16.630 and a p-value of 0.000. These findings demonstrate that gamification has a strong positive effect on user engagement, suggesting that the more appealing the gamification features implemented in Shopee, the greater the level of user participation and interaction with the platform. Features such as missions, rewards, competitions, and point systems are able to encourage users to interact more actively and spend more time using the application. From a theoretical perspective, gamification fulfills users' psychological needs for achievement, enjoyment, and competition, thereby increasing their cognitive and emotional engagement with the platform. These findings are in line with studies conducted by Bitrián et al. (2021) and Garcia-Jurado et al. (2021), which demonstrated that gamification significantly enhances user engagement by

creating more interactive and enjoyable digital experiences. In addition, the findings also support Zhang et al. (2023), who found that gamification affordances positively influence engagement and retention in digital platforms. Compared to previous studies, this research strengthens the evidence that gamification plays a substantial role in increasing engagement specifically in the context of Shopee users in Indonesia.

The Relationship between User Engagement and Customer Loyalty

The relationship between User Engagement and Customer Loyalty showed a path coefficient of 0.435, accompanied by a t-statistic of 7.398 and a p-value of 0.000. These results indicate that user engagement exerts a positive and statistically significant effect on customer loyalty. These findings imply that users who are more actively involved with the platform tend to develop stronger loyalty toward Shopee. High engagement encourages users to spend more time interacting with the application, build emotional attachment, and develop positive experiences that increase their intention to continue using the platform. In the e-commerce context, engagement reflects not only behavioral involvement but also emotional and cognitive attachment that contributes to long-term customer relationships. This result is consistent with the findings of Roy et al. (2023), which showed that customer engagement positively influences loyalty through personalized and interactive digital experiences. The findings also align with Bitrián et al. (2021), who emphasized that higher engagement strengthens users' emotional attachment to digital platforms. Therefore, this study confirms that user engagement acts as an important factor in strengthening customer loyalty and maintaining long-term relationships between users and e-commerce platforms such as Shopee.

Bootstrapping Results for Indirect Effects

Table 10. Path Coefficient Bootstrapping Indirect Effect

Hypothesized Relationship	Path Estimate	Average Estimate	Deviation Value	T statistics	P-values	Result
Gamification -> User Engagement -> Customer Loyalty	0.292	0.295	0.046	6.320	0.000	Accepted

Source: Output SmartPLS 4

The Mediating Role of User Engagement in the Relationship between Gamification and Customer Loyalty

The indirect effect analysis demonstrates that the relationship between Gamification and Customer Loyalty through User Engagement generated a path coefficient value of 0.292, with a t-statistic of 6.320 and a p-value of 0.000. Since the p-value is below the significance threshold of 0.05, the indirect effect can be considered statistically significant, indicating that User Engagement successfully mediates the relationship between Gamification and Customer Loyalty. These findings suggest that the implementation of gamification features does not only directly influence customer loyalty but also indirectly strengthens loyalty by increasing users' engagement with the platform. In other words, gamification elements such as rewards, challenges, competitions, and point systems are able to encourage users to interact more

actively, spend more time using the application, and develop stronger emotional attachment toward Shopee, which subsequently contributes to the formation of customer loyalty.

The findings of this study support previous research conducted by Zhang et al. (2023), which revealed that user engagement acts as an important mediating variable in explaining the influence of gamification affordances on user retention and digital platform usage. Similarly, Bitrián et al. (2021) emphasized that gamification increases engagement by fulfilling users' psychological needs, including enjoyment, competence, and relatedness, which ultimately strengthen long-term relationships between users and digital platforms. The results are also consistent with Rachmadanty et al. (2025), who found that the relationship between gamification and customer loyalty becomes stronger when mediated by psychological variables such as customer satisfaction. However, this study specifically demonstrates that user engagement serves as an important behavioral and emotional mechanism in explaining how gamification contributes to customer loyalty within the e-commerce context.

Furthermore, the significant direct effect of Gamification on Customer Loyalty indicates that User Engagement functions as a partial mediator rather than a full mediator. This means that gamification is capable of influencing customer loyalty both directly and indirectly through increased engagement. The partial mediation result implies that although user engagement plays an important role in strengthening loyalty, other factors outside the model may also contribute to the relationship between gamification and customer loyalty. Therefore, the findings highlight the importance for e-commerce platforms such as Shopee to not only focus on implementing entertaining gamification features but also design experiences capable of maintaining users' active involvement and emotional attachment in order to achieve long-term customer loyalty.

Effect size (f^2)

Table 11. Results of Effect Size Test

Variable	Customer Loyalty	Gamification	User Engagement
Customer Loyalty			
Gamification	0,282		0,824
User Engagement	0,283		

Source: Output SmartPLS 4

The effect size (f^2) value of 0.282 for the relationship between Gamification and Customer Loyalty indicates that the effect of Gamification on Customer Loyalty falls into the medium effect category. This finding suggests that the implementation of gamification elements provides a meaningful contribution to improving customer loyalty, although it is not the dominant factor. Therefore, gamification is capable of encouraging customer attachment through more interactive experiences, although other variables also contribute to the formation of overall loyalty.

The effect size (f^2) value of 0.824 for the relationship between Gamification and User Engagement indicates that the effect of Gamification on User Engagement falls into the large effect category. This finding confirms that gamification plays a very strong role in increasing user engagement, where elements such as rewards, challenges, and interactivity are able to

significantly attract users' attention and participation. In other words, gamification is a key factor in creating more engaging and sustainable user experiences.

The effect size (f^2) value of 0.283 for the relationship between User Engagement and Customer Loyalty indicates that the effect of User Engagement on Customer Loyalty falls into the medium effect category. These findings suggest that the higher the level of user engagement, the greater the likelihood of forming customer loyalty. However, this effect is not entirely dominant, indicating that support from other factors such as satisfaction or trust is still needed to strengthen customer loyalty more optimally.

CONCLUSION

The findings of this study indicate that gamification plays an important role in strengthening customer loyalty among Shopee users in Indonesia. Gamification features were found to encourage higher user engagement, which subsequently contributes to the formation of stronger customer loyalty toward the platform. The study also confirms that user engagement acts as a mediating variable in the relationship between gamification and customer loyalty, indicating that interactive and enjoyable experiences can increase users' emotional attachment and long-term commitment to the platform. Overall, these findings suggest that the implementation of effective gamification strategies can help e-commerce platforms enhance user involvement and maintain sustainable customer loyalty in increasingly competitive digital markets.

Future studies are suggested to expand the current research framework by integrating additional variables, such as customer satisfaction, trust, and perceived value, to obtain broader insights into the development of customer loyalty in e-commerce settings. In addition, subsequent research may examine other e-commerce platforms beyond Shopee to enhance the generalizability of the findings. From a methodological perspective, future researchers are also encouraged to apply longitudinal approaches and analyze variations in user characteristics in order to better understand the effectiveness of gamification across different user segments.

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