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The Influence of Gamification and Application-Based Loyalty Systems on Customer Satisfaction on E-Commerce Platforms

(*Pengaruh Gamifikasi dan Sistem Loyalitas Berbasis Aplikasi terhadap Kepuasan Pelanggan pada Platform E-Commerce*)

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Abstract :

Objective : This study aims to examine the effect of gamification on customer satisfaction and loyalty systems. The research seeks to understand how the implementation of interactive game elements such as rewards, points, and challenges can influence customers' satisfaction and strengthen their loyalty toward a brand or platform.

Methodology : The research applies a quantitative approach using survey methods with 120 respondents who actively use e-commerce applications. Data analysis was carried out using SEM Model with PLS.

Research Results : The results indicate that gamification positively and significantly affects both customer satisfaction and loyalty systems, and that the loyalty system also contributes to higher customer satisfaction. These findings suggest that integrating gamification into loyalty strategies can effectively enhance customer engagement and long-term loyalty. The study highlights the importance of designing enjoyable, rewarding, and interactive customer experiences as a strategic approach to improving satisfaction and retention.

Keywords: Gamification, Loyalty System, Customer Satisfaction, E-Commerce

1. Introduction

With the rapid development of technology and digitalization, e-commerce platforms increasingly require innovative strategies to attract and retain customers. One emerging strategy is the implementation of gamification, which can be seen as an effective marketing tool in creating engaging experiences for customers (Milanesi et

al. 2022); (Rizano and Salehudin 2023). Gamification not only serves to increase customer engagement but also to strengthen e-commerce business models, enabling companies to achieve sales and branding goals simultaneously (Sundjaja et al. 2022). Studies demonstrating the role of gamification in enhancing customer loyalty underscore the importance of gamification elements that can create immersive and enjoyable experiences for users, ultimately contributing to higher customer satisfaction (Al-Zyoud 2020); (Bogoslov et al. 2023); . For example, gamification elements such as reward and challenge systems can increase user engagement with the platform, leading to higher purchase decisions and stronger loyalty (Aprilia and Alfansi 2024); (Gao and Zhao 2023). Research conducted on m-commerce platforms reveals that users exposed to gamification elements have a tendency to make impulsive purchases, reflecting the connection between positive experiences and social and hedonic values in the shopping context (Bogoslov et al. 2023); (Huynh and Tu 2023).

Furthermore, digital service quality is also a crucial factor in determining e-commerce customer satisfaction. Research shows that customer satisfaction levels can increase in line with increased trust in the quality of the service provided (Hidayat and Anasis 2020); (Elemparo 2023). Therefore, the integration of gamification in loyalty applications is expected to not only increase engagement but also create a more satisfying shopping environment for consumers. This is crucial for maintaining competitiveness in an increasingly competitive market (Yanti and Octariadi 2022); (Aparício, Costa, and Moises 2021).

In the Asian region, particularly Indonesia, the implementation of gamification on e-commerce platforms is expected to meet evolving consumer preferences, where digital technology is becoming an integral part of shopping behavior. (Rizano and Salehudin 2023); (Raman 2020). By focusing on the integration of gamification in an app-based loyalty system, this study aims to evaluate its impact on customer satisfaction, which is crucial for building an effective marketing strategy in the context of e-commerce.

2. Theoretical Study

2.1 Gamification

Theoretical studies regarding gamification variables in the context of e-commerce explain how the application of game elements can increase customer engagement, satisfaction and loyalty. Gamification, as a concept, refers to the use of game design and experience elements in non-gaming contexts to make customer interactions more engaging and enjoyable (Chauhan, Akhtar, and Gupta 2021) (Ashrafpour et al. 2021).

First of all, gamification offers various elements such as challenges, rewards, and interaction mechanisms that can enhance the user experience. Research by Pour et al. shows that gamification not only serves to entertain, but also to encourage emotional engagement with the brand, leading to loyalty and satisfaction (Pour et al. 2021). In this context, gamification is seen as a tool to strengthen the emotional connection between customers and brands through the positive experiences created (Torres, Augusto, and Neves 2021) (Zhang, Wan, and Jin 2023).

Furthermore, the effects of gamification are also evident in increased customer interaction on e-commerce platforms. (Zandi and Sekhavat 2024) added that marketing strategies that integrate gamification elements can provide a more immersive shopping experience, thereby increasing positive brand perceptions and customer engagement. This concept supports the argument that engaging customer experiences can encourage customers to participate more actively in the purchasing process and increase their likelihood of brand loyalty.

Furthermore, in the context of purchasing behavior, gamification has been shown to influence purchasing decisions. (Gao and Zhao 2023) revealed that gamification elements help motivate customers to make impulse purchases, demonstrating a positive relationship between gamification and consumer behavior. Thus, gamification elements such as challenges and rewards play a role not only in fostering positive experiences but also in facilitating faster purchasing decisions.

Furthermore, understanding how gamification can be applied in a service context is also important. For example, research by (Ashrafpour et al. 2021). Studies have

shown that gamification systems can increase customer satisfaction with services, which in turn contributes to the development of customer trust (Hosseini and Rezvani 2021). This demonstrates that the implementation of gamification is not only functional in the realm of application design, but also in creating a better service experience in the eyes of customers.

To create a significant impact, marketers need to understand and formulate appropriate gamification strategies to increase customer perceived value through e-commerce applications. Torres et al. emphasize the importance of perceived value in developing brand loyalty and purchasing decisions, which is a key focus of research on gamification (Torres, Augusto, and Neves 2021). By developing appropriate gamification mechanisms, companies can stimulate greater engagement, increase satisfaction, and foster long-term loyalty through more positive interactions with customers.

Overall, the integration of gamification in e-commerce offers significant opportunities to improve customer experience, stimulate engagement, and support business objectives, making it highly relevant in the modern marketing landscape.

2.2 Loyalty Systems

Theoretical studies on loyalty systems focus on the concepts and elements that support the development and implementation of customer loyalty programs in the e-commerce domain. A loyalty system is a strategy designed to increase customer engagement with a brand or company through various incentives and rewards that motivate customers to make repeat purchases. This strategy aims not only to increase sales but also to build long-term relationships with customers (Sutisna and Sutrisna 2023).

First, understanding customer loyalty is crucial in the e-commerce context. Customer loyalty is defined as a customer's commitment to repeatedly purchase from a brand or company, influenced by the shopping experience, service quality, and perceived value (Farihatunisa and Mafruhat 2023). This suggests that a well-designed loyalty

system can increase customer satisfaction and foster customer trust in the brand (Syukran 2023).

Furthermore, information technology plays a crucial role in the implementation of loyalty systems. In this context, many e-commerce companies are utilizing mobile applications to implement loyalty programs that are efficient and easily accessible to customers. App-based loyalty programs not only.

3. Research Methodology

This research employed a quantitative method with a survey approach. The study population comprised active users of e-commerce platforms in Indonesia, with a sample of 120 respondents selected through purposive sampling.

The research instrument was a closed-ended questionnaire with a Likert scale of 1–5. Data analysis used the SEM model through PLS 4.0 to test the effect of the independent variables (gamification and loyalty systems) on the dependent variable (customer satisfaction).

Table 1. Research Variables

Variable	Indicator	Statements
Gamifikasi (Zega, Perdanakusuma, and Hariyanti 2025)	Challenge & Achievement	I feel challenged when completing missions/tasks in e-commerce apps.
	Reward & Point System	The points or rewards I earn from gamification make me more motivated to shop.
	Engagement & Enjoyment	The gamification feature makes my experience using the app more enjoyable.
	Feedback & Progress	The progress display encourages me to continue using the app.
Sistem Loyalitas (Mustikasari 2022)	Reward & Benefit	The loyalty program provides tangible benefits (discounts, cashback, points).
	Convenience & Accessibility	The loyalty program is easily accessible through the app.
	Retention & Relationship	I prefer this app over competitors because of the loyalty program.

Variable	Indicator	Statements
	Personalization	I feel like the app understands my preferences through the loyalty system offers.
Kepuasan Pelanggan (Zega, Perdanakusuma, and Hariyanti 2025)	Expectation & Fulfillment	This app meets my expectations for online shopping.
	Experience & Enjoyment	I find shopping through this app enjoyable.
	Overall Satisfaction	Overall, I'm satisfied with using this e-commerce app.
	Repurchase Intention & Loyalty	I would recommend this app to others.

4. Hasil Penelitian

4.1 Outer Model

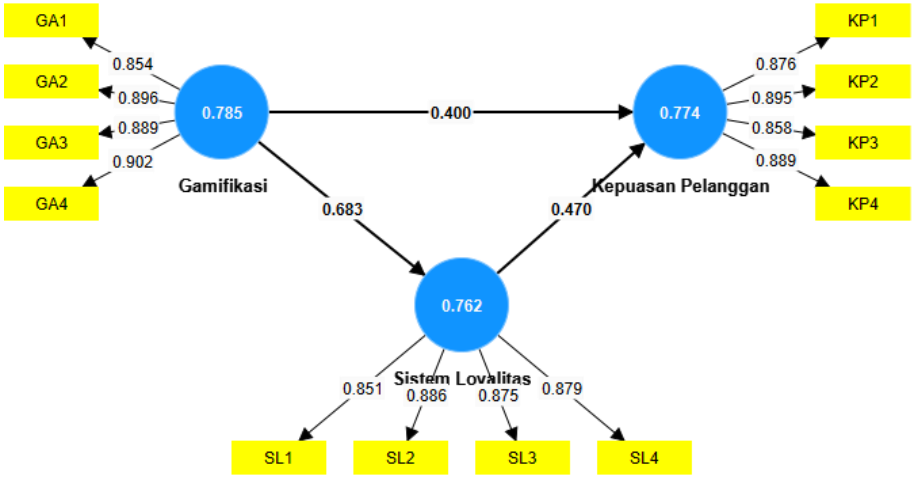

Figure 1. Outer Model

Convergent Validity

Convergent validity is assessed through indicator reliability, which is reflected in the loading factor value. This value indicates the level of correlation between the questionnaire item and the construct score it measures. A loading factor above 0.7 is considered to meet the feasibility standard.

Table 2. Convergent Validity Results

Indicator	Outer loadings	Description
GA1 <- Gamification 0.854 Valid	0,854	Valid
GA2 <- Gamification 0.896 Valid	0,896	Valid
GA3 <- Gamification 0.889 Valid	0,889	Valid
GA4 <- Gamification 0.902 Valid	0,902	Valid

Indicator	Outer loadings	Description
KP1 <- Customer Satisfaction 0.876 Valid	0,876	Valid
KP2 <- Customer Satisfaction 0.895 Valid	0,895	Valid
KP3 <- Customer Satisfaction 0.858 Valid	0,858	Valid
KP4 <- Customer Satisfaction 0.889 Valid	0,889	Valid
SL1 <- Loyalty System 0.851 Valid	0,851	Valid
SL2 <- Loyalty System 0.886 Valid	0,886	Valid
SL3 <- Loyalty System 0.875 Valid	0,875	Valid
SL4 <- Loyalty System 0.879 Valid	0,879	Valid

Source: processed data, 2025

Based on the results of the outer loadings analysis for each indicator For the constructs of Gamification, Customer Satisfaction, and Loyalty System, all values were above 0.70 (range 0.851 to 0.902). This value indicates that each indicator has an excellent level of convergent validity for the construct it measures. According to (Hair et al. 2023) criteria, an indicator is considered to have adequate convergent validity if its outer loading exceeds 0.70, meaning the variable is able to explain more than 50% of the indicator's variance.

For the Gamification construct, the outer loading values ranged from 0.854 to 0.902. This indicates that the four indicators (GA1–GA4) consistently and strongly represent the gamification concept being measured. This means that each item in the gamification instrument contributes significantly to explaining the latent variable, thus concluding that the gamification aspect in this study has high construct consistency.

For the Customer Satisfaction construct, the outer loading values ranged from 0.858 to 0.895, indicating that all indicators (KP1–KP4) were strongly related to the customer satisfaction construct. This indicates that the statements used to measure customer satisfaction accurately and relevantly captured respondents' perceptions, and reinforces the conclusion that the measurement model for this construct is empirically reliable.

Meanwhile, for the Loyalty System construct, the outer loading values ranged from 0.851 to 0.886. With values above the 0.70 threshold, all indicators (SL1–SL4) were deemed valid in reflecting the loyalty system construct. This means that the loyalty

dimensions measured are able to describe customer behavior and tendencies within the context of the system being developed.

Overall, the high and consistent outer loading results for the three constructs indicate that the measurement model has excellent convergent validity. Practical implications: this research instrument can be used reliably to measure the relationship between gamification variables, customer satisfaction, and loyalty systems. Thus, the constructed structural model has a strong measurement basis for proceeding to the composite reliability and discriminant validity evaluation stages to ensure consistency and uniqueness among the constructs in the study.

Convergent Validity Analysis

Average Variance Extracted (AVE) testing was conducted to assess the convergent validity of the latent variables. An AVE value of ≥ 0.50 indicates that the latent variables have met the convergent validity criteria.

Table 3. shows the results of convergent validity

Variable	Average variance extracted (AVE)	Description
Gamification	0,785	Valid
Customer Satisfaction	0,774	Valid
Loyalty System	0,762	Valid

Source: processed data, 2025

Based on the results of the Average Variance Extracted (AVE) test for the three research constructs—Gamification, Customer Satisfaction, and Loyalty System—all AVE values were above 0.50, with Gamification, Customer Satisfaction, and Loyalty System achieving 0.785, respectively. These values indicate that each construct meets the criteria for good convergent validity. According to (Hair et al. 2023)(Hair, J., Black, W., Babin, B., and Anderson 2018), an AVE value exceeding 0.50 indicates that more than 50% of the indicator's variance can be explained by the construct in question, with the remainder being explained by measurement error.

These results have important implications for the strength and reliability of the measurement model used in the study. The high AVE value for the Gamification construct (0.785) indicates that the indicators used are truly capable of representing

the gamification concept consistently and comprehensively. This means that the instrument used accurately captured respondents' perceptions of game elements within the research context.

For the Customer Satisfaction construct, the AVE value of 0.774 indicates that the indicators explained approximately 77.4% of the variance in the latent construct. This indicates that the customer satisfaction measurement in the model had high internal consistency, with respondents rating the satisfaction dimensions uniformly. Therefore, the customer satisfaction construct can be considered valid in representing the respondents' overall experience.

Meanwhile, the Loyalty System construct, with an AVE value of 0.762, also demonstrated excellent convergent validity. This value indicates that the indicators used to measure customer loyalty explained more than 76% of the construct's variance, indicating that the research instrument successfully measured loyalty in a representative and stable manner.

Overall, all three research constructs had high AVE values and met the minimum threshold for convergent validity. The practical implication of these results is that the measurement model used in this study is proven to be valid and reliable for continuing testing the structural relationships between latent variables using PLS-SEM analysis.

Composite Reliability Analysis

Composite reliability is a measure of confidence in the indicators used to test a variable. A composite reliability value ≥ 0.7 indicates that the variable is reliable. The following SmartPLS output shows the composite reliability values for each variable in this study:

Table 4. Composite Reliability

Variable	Cronbach's alpha	Description
Gamification	0,908	Reliabel
Customer Satisfaction	0,903	Reliabel
Loyalty System	0,896	Reliabel

(Source: data processing, 2025)

Based on the results of Composite Reliability (CR) and Cronbach's Alpha tests for the three research constructs: Gamification, Customer Satisfaction, and Loyalty System, each obtained values above 0.70: 0.908 for Gamification, 0.903 for Customer Satisfaction, and 0.896 for the Loyalty System. These values indicate that all research constructs have an excellent level of reliability and meet the criteria recommended by (Hair et al. 2023), which states that Cronbach's Alpha and Composite Reliability values above 0.70 indicate high internal consistency between indicators within a construct.

Overall, the results of this reliability test indicate that the measurement model in this study has met high reliability standards. The three main constructs have strong internal consistency, thus concluding that the research instrument is free from significant measurement error. The practical implication is that the data obtained from respondents is stable and can be used accurately in testing the structural model using the Partial Least Squares – Structural Equation Modeling (PLS-SEM) approach. Furthermore, the high construct reliability supports the overall validity of the model, strengthening confidence that the relationships between gamification, customer satisfaction, and loyalty systems tested in the structural model reflect real and consistently measurable relationships.

4.2 Inner Model

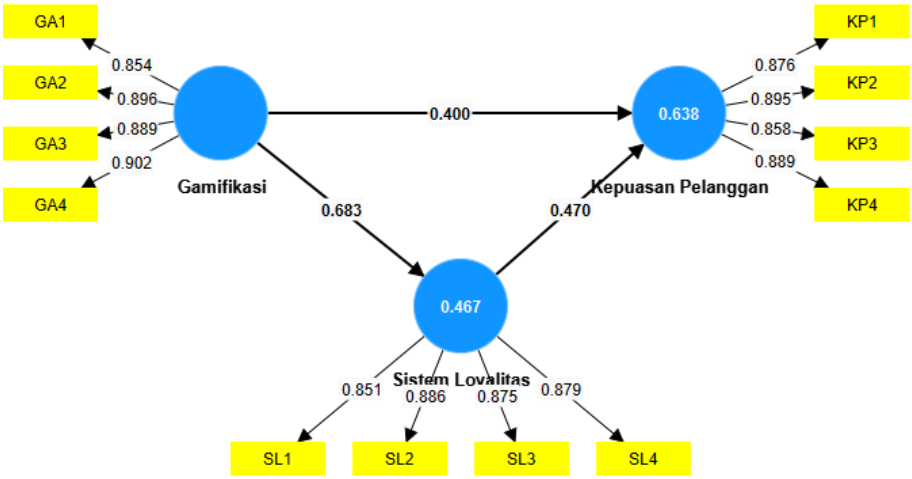

Figure 2. Inner Model

Direct Effect

The direct effect indicates a significant relationship between the research variables. The level of significance is determined using the p-value from SmartPLS 3, where a p-value <0.05 indicates a significant relationship. Table 5 presents the results of the significance of this relationship.

Table 5. Path Coefficient Results

Hypothesis	Original sample	T statistics	P values	Description
Gamification -> Customer Satisfaction	0,400	5,599	0,000	Accepted
Gamification -> Loyalty System	0,683	8,718	0,000	Accepted
Loyalty System -> Customer Satisfaction	0,470	4,997	0,000	Accepted

(Source: data processing, 2025)

Based on the results of hypothesis testing using Partial Least Squares – Structural Equation Modeling (PLS-SEM), three inter-variable relationships were obtained, all of which showed significant results with p-values of 0.000 (<0.05) and t-statistics above 1.96. These results indicate that all hypotheses proposed in the research model are accepted, meaning each independent variable has a positive and significant influence on the dependent variable. First, testing the relationship between Gamification and Customer Satisfaction yielded an original sample value of 0.400, a t-statistic of 5.599, and a p-value of 0.000. A positive coefficient indicates that the greater the implementation of gamification elements, the greater the increase in customer satisfaction. This suggests that implementing gamification strategies, such as points systems, challenges, or digital rewards, can increase customer engagement and create a more enjoyable experience, thus directly impacting satisfaction with the service used. This finding aligns with various previous studies that have shown gamification to be effective in building positive customer experiences and strengthening emotional bonds between users and the system.

Second, the relationship between Gamification and the Loyalty System showed a coefficient of 0.683 with a t-statistic of 8.718 and a p-value of 0.000, indicating a very strong and significant effect. These results demonstrate that gamification elements not only increase immediate satisfaction but also foster long-term customer loyalty. In other words, the use of game mechanics can foster emotional attachment and

customer commitment to the system or platform used. The practical implication of these results is that implementing gamification can be an effective strategy for customer retention, as it can create lasting relationships through intrinsic motivation and interactive experiences.

Third, the analysis of the relationship between Loyalty Systems and Customer Satisfaction showed an original sample value of 0.470, a t-statistic of 4.997, and a p-value of 0.000. These values demonstrate that loyalty systems have a positive and significant impact on customer satisfaction. With a well-designed loyalty system—for example, a rewards program, points accumulation, or membership tiers—customers feel valued for their participation, which in turn increases positive perceptions of the service provided. This demonstrates that loyalty systems serve not only as a customer retention tool but also as a mechanism that strengthens satisfaction through recognition and incentives received by customers.

4.3 Discusion

4.3.1 The effect of gamification on customer satisfaction

A coefficient of 0.400 indicates that increased gamification (game elements such as challenges, rewards, points, badges, and competitions) significantly increases customer satisfaction. The t-statistic (5.599) and p = 0.000 confirm that this effect is not coincidental but statistically significant.

The literature supports this finding. For example, the study "The Effect of Gamification on Customer Satisfaction through Customer Engagement on the Marketplace" by (Puspasari, Wilujeng, and Ali 2024) found that gamification directly influences customer satisfaction and also mediates customer engagement in the marketplace.

Furthermore, (Zega, Perdanakusuma, and Hariyanti 2025) in "The Influence of Gamification Affordance on Customer Loyalty among E-Commerce in Indonesia" also confirmed that gamification aspects (especially task/quest-type) increase satisfaction, which then supports loyalty.

Thus, the coefficient result of 0.400 is theoretically and practically reasonable — gamification can indeed increase satisfaction by creating a fun, interactive, and motivating experience.

4.3.2 The effect of gamification on the loyalty system

The coefficient of 0.683 is quite large, indicating a very strong effect of gamification on the loyalty system. The t-statistic of 8.718 is very high, with a p = 0.000 value, confirming strong significance. This indicates that game elements not only temporarily increase engagement but also significantly contribute to the development and effectiveness of the loyalty system (e.g., points programs, rewards, membership tiers, loyalty challenges, etc.).

A study by (Zega, Perdanakusuma, and Hariyanti 2025) states that affordance gamification influences loyalty by increasing hedonic and utilitarian value, as well as through satisfaction.

Research in the hospitality industry by (Bravo, Catalán, and Pina 2023) shows that loyalty programs with gamification elements are more engaging and able to trigger customer engagement behavior, which indirectly strengthens loyalty.

Thus, the coefficient of 0.683 indicates that gamification is a crucial element in building and strengthening an effective loyalty system.

4.3.3 The Influence of Loyalty Systems on Customer Satisfaction

A coefficient of 0.470 indicates that a good loyalty system (e.g., rewards, reward tiers, and consistent incentives) also significantly increases customer satisfaction. The t-statistic of 4.997 and p = 0.000 support this finding.

This suggests that not only is gamification important, but how the loyalty system is implemented and executed is also crucial for maintaining customer satisfaction. The study "The Effect of Gamification in Loyalty Programs on the Loyalty of Marketplace Users" by (Setiawan et al. 2023) demonstrated that user experience with gamified loyalty programs (including rewards and novelty) influences loyalty through

satisfaction. The journal "Research on the Impact of Gamification Marketing on Consumer Brand Loyalty" by (Jiyu Sui 2025) noted that virtual rewards and task systems influence brand loyalty through user experience, ultimately increasing satisfaction.

Therefore, these results are consistent with the literature: loyalty programs designed with game elements and appropriate incentives will strengthen customer satisfaction.

5. Conclusion

The results indicate that gamification effectively enhances customer satisfaction and strengthens loyalty systems. When customers experience interactive and rewarding engagement, they feel more valued and motivated to maintain their relationship with the brand. Loyalty systems that incorporate playful and engaging elements create a more meaningful connection and encourage repeat participation.

The implication of these findings is that organizations should integrate gamification into their loyalty strategies to increase customer engagement and satisfaction. By offering dynamic and enjoyable experiences such as reward challenges, point systems, and achievement badges companies can build stronger emotional ties with customers, improve retention, and sustain long-term loyalty.

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