

Gamification in digital marketing for e-commerce: a review of strategies to boost engagement and sales

Nazik Saber Rashid ^{1*}, Subhi R. M. Zeebaree ²

¹ Akre University for Applied Science, Technical College of Informatics, Akre, Department of Information Technology, Akre, Kurdistan Region, Iraq

² Energy Eng. Dept., Technical College of Engineering, Duhok Polytechnic University, Duhok, Iraq

*Corresponding author E-mail: naziksufy@gmail.com

Abstract

Gamification has become an innovative and strategic approach within digital marketing, particularly for e-commerce platforms striving to enhance customer engagement, drive sales, and cultivate brand loyalty. Despite its growing adoption, the academic understanding of its mechanisms, implications, and sustainability remains underexplored. This comprehensive review integrates empirical evidence and theoretical perspectives to construct a robust framework for evaluating gamification strategies in e-commerce. The analysis identifies pivotal elements leaderboards, challenges, and incentive structures and their influence on consumer behavior across diverse contexts. Four overarching themes emerge: enhanced consumer loyalty, increased purchase frequency, strengthened brand engagement, and the critical importance of ethical design. Furthermore, the study underscores challenges such as sustaining long-term user commitment and addressing ethical dilemmas related to transparency and manipulation. By offering practical guidelines for implementation and illuminating areas for further inquiry, this research contributes to the scholarly discourse on gamification as a dynamic tool in digital marketing. It establishes a foundation for advancing its application in an ethically responsible and consumer-centric manner.

Keywords: Gamification in Digital Marketing; E-Commerce Strategies; Customer Engagement; Brand Loyalty; Ethical Design in Gamification; and Consumer Behavior Analysis.

1. Introduction

Gamification has become a pivotal strategy in digital marketing, particularly in the e-commerce sector, where it is employed to enhance consumer engagement, foster loyalty, and drive sales. By incorporating game design elements such as points, badges, leaderboards, and challenges, businesses create interactive and immersive experiences that align with modern consumer preferences for entertainment and personalization. The convergence of digital technologies and gamification offers unprecedented opportunities for brands to connect with their audiences, stimulate behavioral change, and establish long-term relationships [1 – 4].

E-commerce platforms, such as mobile apps and loyalty programs, have effectively utilized gamification to address critical challenges like user retention, purchase frequency, and brand advocacy. Studies have shown that gamification elements improve consumer trust and motivation, thereby fostering repeat purchases and word-of-mouth marketing [5 – 7]. Furthermore, gamified mobile marketing strategies, such as interactive advertisements and branded games, have proven successful in capturing the attention of tech-savvy Millennials and Gen Z consumers, who value unique and engaging experiences [7 – 10].

Despite its advantages, the implementation of gamification presents challenges, including ethical concerns related to transparency, data privacy, and the potential for user fatigue from poorly designed systems. Moreover, while short-term gains in engagement are well-documented, further exploration is required to understand the long-term effects on consumer behavior and loyalty [11 – 14]. Recent literature emphasizes the need for balanced and thoughtfully designed gamification strategies that cater to diverse consumer motivations while maintaining ethical standards [4] [14 – 16].

This review synthesizes existing research on gamification in digital marketing for e-commerce, focusing on strategies that enhance engagement and drive sales. It highlights key elements of successful gamification, examines its applications across various e-commerce contexts, and identifies gaps for future exploration. By doing so, it aims to provide actionable insights for researchers and marketers seeking to optimize gamification techniques and achieve sustainable business growth [7] [17 – 19].

2. Background theory

Gamification, the application of game mechanics in non-game settings, has developed as a transformative technique in computerized showcasing, particularly inside e-commerce platforms [4], [20]. The joining of gamified mechanics such as focuses, identifications, challenges, leaderboards, and intuitively narrating has been demonstrated to improve client engagement and drive craved buyer behaviors[4],

[21]. This vital approach leverages inherent and outward motivational components, cultivating a more profound association between shoppers and e-commerce platforms [7], [22].

The hypothetical establishment of gamification in e-commerce is established in motivational and behavioral hypotheses, counting Self-Determination Hypothesis and Affordance Hypothesis. The Self-Determination Hypothesis emphasizes the part of competence, independence, and relatedness in persuading behavior, which gamified components such as accomplishments and social interaction successfully address [23]. The affordability hypothesis clarifies how advanced artifacts like gamification components make activity possibilities, empowering clients to be connected in locks in important ways [23] [24].

In e-commerce, gamification improves client encounters over a few measurements. Hedonic components such as satisfaction and inundation improve client intelligence, whereas utilitarian components like objective movement and rewards give unmistakable value [20], [25]. Social affordances, counting arranged introductions, peer acknowledgment, and agreeable challenges, essentially increase community engagement and word-of-mouth advocacy [24], [25]. For occurrence, Shopee's gamified dependability programs in Indonesia have effectively utilized focuses and rewards to hold clients and energize rehash purchases[24].

Observational thinks about highlight that gamified highlights can affect basic commerce measurements such as buy purposeful, client maintenance, and stage devotion. For illustration, gamified suggestion frameworks have appeared to extend client acknowledgment of item proposals by inserting accomplishments and interaction-based affordances [26] [23]. Essentially, gamification in virtual reality-enhanced platforms has been found to extend seen esteem through media abundance and intelligently engagement [25].

Figure 1 depicts the repetitive flow of gamified mechanics, highlighting how interrelated aspects such as challenges, prizes, leaderboards, badges, and social interaction help to create a unified gamified ecosystem. This circular model depicts how gamification promotes long-term engagement by balancing internal and extrinsic motivators.

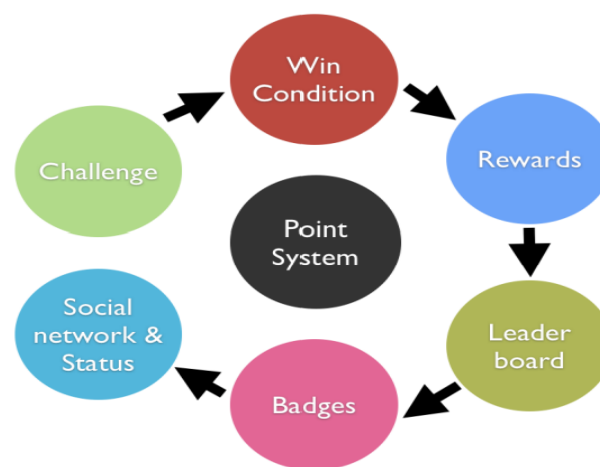


Fig. 1: The Gamification Loop [27].

This model depicts the dynamic interplay of essential gamification components like challenges, prizes, leaderboards, badges, and social engagement. These integrated parts form a feedback loop that encourages ongoing user interaction. Challenges encourage user interaction, which is rewarded with points or achievements. These rewards increase user motivation and happiness, promoting more involvement. Leaderboards and badges encourage social rivalry and recognition, which strengthens the user's emotional commitment. By balancing intrinsic and extrinsic motivators, this loop assures long-term engagement and matches consumer behavior with company objectives such as increasing purchase frequency and brand loyalty.

In spite of its benefits, the usage of gamification poses challenges, including the potential for over-gamification and client fatigue [4] [21]. Pundits moreover caution against shallow gamification, which may fall flat to provide important client encounters and long-term engagement [20], [28]. Tending to these concerns requires a mindful plan that adjusts gamified components to client needs and social contexts [7], [24].

This amalgamation underscores the potential of gamification as an effective device in computerized showcasing, changing e-commerce stages into energetic and engaging ecosystems. By leveraging mental bits of knowledge and imaginative plans, businesses can not as it were enhance consumer encounters but moreover accomplish key targets within the competitive computerized commercial center.

3. Literature review

In recent years, numerous researchers have explored the use of gamification as a strategic tool in digital marketing to enhance engagement and boost sales in e-commerce. This section will thoroughly examine the key findings and strategies highlighted in the most recent studies on this topic.

Hajarian et al. (2020) [22], Developed a gamified word-of-mouth (WOM) recommendation system to increase engagement and revenues on e-commerce platforms. By including gamification components like as points and leaderboards, the system encouraged users to contribute product suggestions based on their own experiences. Implemented on a cosmetic e-commerce website, it resulted in a 116% increase in female visits, a 100% increase in male visits, and a 7% increase in buy frequency. The findings demonstrated the system's capacity to improve user involvement and sales while overcoming the constraints of standard recommendation systems. Future enhancements include analyzing user contributions and spreading the system into new disciplines.

Di et al. n.d. [29], Gamification was studied for its potential to improve client engagement in China's luxury sector. It looked at how luxury firms are using gamified marketing methods to target younger, tech-savvy customers who value unique experiences and digital interactivity. By using gamified components like as challenges, awards, and leaderboards, marketers were able to build interactive ads that connected with Millennial and Gen Z customers. The survey highlighted successful instances, such as premium companies adopting platforms like WeChat Mini Programs and collaborating with gaming developers to provide personalized digital experiences. The findings highlighted the growing relevance of gamification as a strategic tool in a quickly digitized and competitive market, particularly after COVID-19, when online and multichannel strategies are critical for consumer engagement.

Kaarlehto (2020) [28], used techniques like seminars, prototyping, and benchmarking using the Service Design framework. The test was a useful early touchpoint in the customer journey, successfully engaged participants, and matched organizational and customer goals. It emphasized how gamification may help with contemporary B2B marketing issues like content-driven tactics and proactive engagement. Piloting and improving the tool for wider use were among the future suggestions.

Diyah et al. (2021) [30], investigated the influence of gameful experience (GAMEX) and game design on a self-brand connection in e-commerce, with brand engagement serving as a mediating variable. Using a quantitative experimental method with 250 regular e-commerce users, it was revealed that gameful experiences—including enjoyment, immersion, and creativity—as well as game design aspects such as mechanics, aesthetics, and storytelling greatly improved self-brand connection. Brand involvement moderated this connection, highlighting the importance of emotional and cognitive attachment. The findings provide useful information for UX designers and marketers looking to develop compelling advergames that encourage client loyalty and help e-commerce businesses stay sustainable.

Canio et al. (2021) [20], examined the function of gamification in increasing shopping engagement and its impact on mobile buying intentions. Using a sample of 893 Chinese consumers using structural equation modeling, the study discovered that intrinsic motives, such as gamification, focused attention, shopping delight, and socialness, had a substantial influence on buying behavior. Furthermore, past online purchasing experience influenced the link between engagement and purchase intent. The findings highlighted gamification's ability to influence consumer behavior and recommended that introducing game elements into mobile apps might increase user engagement and purchase intent, giving actionable data to marketers and app developers.

Aparicio et al. (2021) [21], The influence of gamification and reputation on e-commerce usage and repurchase intentions was explored using a theoretical model verified by Structural Equation Modeling (SEM). The key findings demonstrated that gamification components such as points, badges, and leaderboards greatly increased platform utilization, whereas reputation positively improved vendor trust. The study found that trust, platform ease of use, and perceived utility were important predictors of user engagement and repurchase behavior. The study gave practical insights into merging gamification and reputation methods to improve e-commerce platforms, resulting in higher client retention and sales.

Neffati et al. (2021) [31], investigated the effects of gamification on e-commerce customer engagement and purchasing behavior. The research showed that including gamified components such as points, challenges, and prizes in the customer experience improved both engagement and loyalty. It discovered that gamification tactics dramatically enhanced user interactions, contentment, and purchase intentions, implying a strong relationship between game design mechanics and consumer behavior. The findings highlight the potential of gamification as a strategic tool for e-commerce platforms to develop stronger customer interactions and achieve long-term business growth.

Jang et al. (2021) [25], Gamification and virtual reality (VR) were examined as ways to influence consumer behavior in a tourist e-commerce platform. A gamified VR-enhanced system (VRTWS) was created and tested with 208 participants. The results revealed that gamification aspects increased media richness, which improved perceived utility, ease of use, and value. Immersion, facilitated by presence, increased perceived value, contentment, and adoption intentions. The study emphasized the use of gamified VR systems to increase customer engagement and adoption in tourist marketing.

Sithipon et al. (2022) [32], Customer satisfaction was shown to have a mediating effect in the association between gamification and repurchase intention on Thai e-commerce platforms. Using survey data from 392 participants, it was discovered that gamification greatly affected customer satisfaction, which in turn had a major positive effect on repurchase intention. The findings identified consumer happiness as a crucial mediator, underlining how gamification increases customer engagement and repeat purchases. The study provides practical insights for e-commerce organizations to implement gamified tactics to improve customer retention and happiness, resulting in long-term development.

Susilo et al. n.d.[33], Gamification and the Technology Acceptance Model (TAM) were tested to see how they affected repurchase intention on Shopee, an Indonesian e-commerce site. Gamification had no significant effect, while TAM, as defined by ease of use and usefulness, had a favorable impact on repurchase intention. TAM also did not modify the association between gamification and repurchase intention. The study emphasized the need to prioritize usability and utility above gamification to stimulate repeat purchases, particularly among Generation Z customers.

Sundjaja et al. (2022) [34], Gamification's influence on loyalty program utilization in Indonesian e-commerce was investigated, with an emphasis on aspects such as fun, emotional commitment, and reward attractiveness. Using data from 242 respondents and structural equation modeling, the study discovered that playfulness and emotional commitment strongly affected loyalty program utilization, which was mediated by favorable views toward loyalty programs. Reward attractiveness has an indirect effect on loyalty use. Gamified components in loyalty programs, such as interactive features, have been shown to increase engagement and program efficacy. The findings highlight the value of including gamified designs to increase consumer loyalty in competitive e-commerce settings.

Sari (2022) [35], investigated the impact of gamification on brand attitude and loyalty intentions in the e-commerce setting. Data obtained from 271 participants demonstrated that perceived utility, perceived social influence, and perceived enjoyment all had a positive impact on brand attitude, however reported ease of use did not. Brand attitude has a major influence on both engagement intention and brand loyalty. The data indicated that perceived utility was the largest predictor of brand attitude, while perceived enjoyment was the primary driver of engagement. The study emphasized the relevance of gamified components in promoting emotional bonding and consumer loyalty, proposing that businesses create interesting and rewarding game features to improve user experience and brand connection.

Sheetal et al. (2023) [36], investigated the use of gamification in improving consumer experiences in online retail while considering ethical considerations. Using semi-structured interviews with gamification specialists, the study highlighted three major themes: gamification's application, customer experiences, and ethical difficulties. Gamification, which includes components such as points, challenges, and leaderboards, has been shown to effectively promote engagement, motivation, and brand loyalty. However, ethical issues about lack of openness, data exploitation, and manipulative techniques were identified as possible threats. The study stressed the necessity of ethical gamification design in ensuring consumer trust and happiness, as well as encouraging its usage as an effective method for enhancing customer engagement and retail outcomes.

Tien Minh et al. (2023) [37], addressed the using of the Unified Theory of Acceptance and Use of Technology (UTAUT) paradigm, researchers evaluated the influence of gamification on online buying behavior among Vietnamese adolescents aged 16 to 30. Based on data from 288 participants, the findings revealed that enabling environments, effort expectancy, social influence, and performance expectation all had a substantial impact on the desire to embrace gamification, which in turn favorably influenced online purchasing behavior. Facilitating circumstances were shown to be the most important element. Gamification adoption intention explained 54.1% of the variation, whereas online buying behavior accounted for 29.6%. The study emphasized gamification's potential to improve consumer engagement, motivation, and shopping experiences while also providing practical ideas for incorporating gamification into e-commerce strategy.

Hermawan et al. (2023) [38], looked at the influence of gamification elements on consumer engagement on e-commerce platforms in Indonesia. The study assessed customer involvement across four dimensions: lifetime value, referral value, influence value, and knowledge

value, using data obtained through questionnaires from 114 respondents and processed using SmartPLS. The results showed that gamification had a beneficial impact on all dimensions, with the biggest benefits reported in customer influence and knowledge values. These findings imply that gamified tactics improve user involvement, increase brand loyalty, and boost feedback and word-of-mouth marketing. To enhance consumer engagement, the study suggested that organizations prioritize features that promote social interaction, progress monitoring, and rewards.

Dinh et al. n.d.[26], the influence of gamification on user engagement inside a second-hand e-commerce platform was investigated, with an emphasis on the integration of badges and awards. The gamification feature was built using the Lean UX technique, iteratively improved through prototypes, then deployed with ReactJS. A/B testing and user interviews were used to assess the impact. The findings revealed that gamification aspects enhanced engagement slightly, particularly among individuals with prior gaming expertise. To boost interaction, usability changes such as easier navigation and improved explanations of achievements were suggested. The findings highlighted gamification's ability to fit with fundamental corporate objectives such as sustainability while boosting user experience.

Kusumawardani et al. (2023) [39], Gamification, as well as social, hedonic, and utilitarian values, were explored for their impact on e-commerce adoption, with an emphasis on user intents to continue using platforms and spreading word of mouth (WOM). Using data from 219 e-commerce users and structural equation modeling, researchers discovered that network exposure had a substantial impact on social influence, recognition, and reciprocal advantages. Among them, social influence and utilitarian values were shown to alter user attitudes, resulting in greater intentions to continue using the platform and favorable word of mouth. However, recognition, reciprocal advantages, and hedonic buying incentives had no significant effect on opinions. The study stressed the need to use social and utilitarian motives in gamified e-commerce tactics to increase user engagement and generate long-term success.

Jia et al. (2024) [23], examined how gamification affordances, including achievement, self-expression, interaction, and cooperation, influence recommendation acceptance in e-commerce platforms through perceived utilitarian, hedonic, and social values. Using affordance and perceived value theories, the research employed a quantitative design with 313 participants to evaluate a comprehensive framework. Results indicated that utilitarian value had the strongest effect on recommendation acceptance, followed by hedonic and social values. Among the affordances, interaction and cooperation showed the most substantial impacts across all value dimensions. The findings emphasized the importance of aligning gamification features with consumer motivations to enhance engagement and recommendation effectiveness, providing actionable insights for e-commerce gamification strategies.

Rauh et al. n.d.[40], Gamification was investigated for its ability to diminish product return incentive and increase long-term consumer behavior in e-commerce. Drawing on Self-Determination Theory (SDT), the study conducted an online survey experiment with 973 consumers in the United States, and the data was analyzed using structural equation modeling (SEM). Gamification was found to drastically reduce return motivation through extrinsic mechanisms such as points and badges, rather than increasing intrinsic need satisfaction such as autonomy or competence. While gamification lowered purchasing incentive, it was also shown to have the ability to alter long-term buying patterns. The findings emphasized gamification's promise in proactive return management, but also highlighted its complexity and short-term limits, recommending design improvements for long-term efficacy.

Munawaroh et al. n.d.[24], looked at how gamification affects Indonesian consumer behavior in e-commerce, with an emphasis on the impacts of social motives including network exposure, social influence, and recognition on attitudes and intentions. Using survey data from 384 Shopee users and PLS-SEM analysis, the researchers discovered that network exposure increased social influence, recognition, and reciprocal benefits. Social impact and reciprocal benefits dramatically improved user attitudes, increasing future usage intentions and word-of-mouth recommendations. However, recognition had no substantial effect on reciprocal benefits or attitudes. The study emphasized the potential of gamification to increase user engagement and create good customer behavior, as well as the importance of social dynamics in improving the success of e-commerce platforms.

Sharifi Hashjin et al. (2024) [41], conducted the using of Interpretive Structural Modeling (ISM), researchers investigated the influence of gamification on consumer engagement, brand loyalty, and sustainability in digital marketing. The findings demonstrated that gamification increases engagement by instilling intrinsic motives such as success and rewards, as well as creating brand ties. It also encouraged environmentally beneficial practices through incentives and social competition. The study stressed ethical, intuitive gamification design to foster trust and align with sustainability objectives, and it suggested additional investigation of long-term consequences and future technologies in gamified marketing.

Ebrahimi et al. (2024) [42], Gamification's impact on brand equity and desired consumer behaviors in online shopping was studied, with brand engagement serving as a mediating element. Using survey data from 357 Digikala customers and structural equation modeling, the researchers discovered that gamification had a significant impact on brand equity dimensions such as brand awareness and loyalty, as well as desirable behaviors such as word-of-mouth promotion and resistance to negative information. Gamification's dimensions—immersion, accomplishment, and social interaction—boosted brand engagement, hence mediating its impacts on brand equity and behaviors. The study found that including gamified components into marketing campaigns improves brand-customer connections and stimulates good consumer behavior.

Semenda et al. (2024) [43], investigated how customer interactions and competition dynamics affect engagement and sales using data-driven methodologies. According to the findings, aggressive marketing techniques greatly raised engagement metrics like likes, comments, and shares, all of which were positively connected with increased sales. Game theory was used to identify the best marketing tactics in competitive markets, highlighting the advantages of matching advertising to customer preferences for value and authenticity. In a cutthroat digital environment, this method offered practical insights for developing focused, flexible, and successful e-commerce marketing strategies.

4. Discussion and comparison

The reviewed literature underscores gamification as a powerful tool in digital marketing, particularly within the fast-evolving e-commerce sector. By integrating game-like elements such as badges, leaderboards, challenges, and rewards, businesses have effectively enhanced customer engagement, increased purchase frequency, and strengthened brand loyalty. Despite its demonstrated advantages, the findings highlight several critical challenges and areas requiring further exploration to ensure sustainable implementation.

4.1. Key benefits and strategic potential

Gamification routinely leads to demonstrable increases in consumer engagement and purchasing patterns. For example, [22] and [21] found substantial gains in platform utilization, retention rates, and consumer trust.[29] and[37] found that gamified systems are more effective

with younger groups, such as Millennials and Generation Z. Furthermore,[30] highlight the emotional and cognitive connection generated by gameful experiences, establishing gamification as a key method for developing self-brand ties and long-term loyalty. The studies also demonstrate the strategic versatility of gamification, which can be tailored to different contexts, such as virtual reality platforms [25] , loyalty programs [34], and sustainable e-commerce initiatives[41] These applications show that gamification goes beyond mere engagement, driving tangible business outcomes and fostering competitive advantage.

4.2. Limitations and challenges

However, the efficacy of gamification is greatly reliant on its design and execution. According to [31], poorly designed or overused gamified aspects increase the likelihood of user weariness. [36] present serious ethical concerns about openness, data privacy, and manipulative techniques. These concerns not only diminish customer trust, but they can also bring regulatory attention, especially in countries with rigorous data privacy regulations. Furthermore, gamification's reliance on external factors, such as user delight or prior platform trust, restricts its universal application. For example,[33] found that gamification had limited benefits on encouraging repeat purchases without considering usability and utility criteria.

4.3. Future research and practice directions

Longitudinal studies are needed to assess gamification's long-term effects on user engagement and loyalty. Current research is mostly concerned with short-term outcomes, leaving open issues concerning the long-term impact of gamification. The use of developing technologies like as artificial intelligence, augmented reality, and virtual reality provides opportunity to expand gamification's immersive potential and provide richer, more customized consumer experiences.

Ethical issues must be addressed in future research and applications. [41] underline the link between gamification and larger sustainability goals, allowing firms to incorporate environmental and social responsibility into gamified systems. Practical approaches for improving gamified designs to correspond with customer preferences and market demands include iterative testing (e.g., A/B testing) and data-driven optimization. Finally, personalized gamification solutions that incorporate social interaction, adaptive incentives, and collaborative challenges, as identified by [39] and [23], have the greatest potential for long-term consumer engagement. Businesses should work on developing relevant, customer-centric gamification solutions that meet changing consumer expectations while being ethical.

Table 1: Summary of the Literature Review on Details

Ref.	Method	Advantages	Disadvantages
Hajarian et al. (2020)[22]	Gamified WOM recommendation system implemented on a cosmetic website	Increased engagement and buy frequency significantly	Limited to one sector; needs broader application
Di et al. n.d.[29]	Study of gamification in luxury marketing in China	Connected with Millennial and Gen Z customers	Limited focus on challenges faced by luxury brands
Kaarlehto (2020)[28]	Service Design framework using seminars, prototyping, benchmarking	Addressed proactive engagement in B2B marketing	Requires further tool piloting and improvements
Diyah et al. (2021)[30]	Quantitative experimental method with 250 users	Enhanced self-brand connection through game design	Emotion and cognitive attachment dependency
Canio et al. (2021)[20]	Structural Equation Modeling with 893 Chinese consumers	Improved shopping engagement and mobile buying intent	Influenced by past purchasing experience
Aparicio et al. (2021)[21]	Theoretical model verified by SEM	Boosted platform usage and trust	Reputation-dependent for optimal results
Neffati et al. (2021)[31]	Research on gamified components in customer experience	Increased interactions, satisfaction, and loyalty	May not sustain long-term engagement without updates
Jang et al. (2021)[25]	Gamified VR system tested with 208 participants	Enhanced media richness and perceived value	Complex implementation for small businesses
Sithipon et al. (2022)[32]	Survey data from 392 participants	Improved customer satisfaction and retention	Relies heavily on satisfaction as a mediator
Susilo et al. n.d.[33]	Lean UX method with A/B testing and interviews	Aligned gamification with corporate goals like sustainability	Usability improvements needed for wider adoption
Sundjaja et al. (2022)[34]	Survey with 242 respondents analyzed with SEM	Increased loyalty program engagement	Limited indirect effects on loyalty use
Sari (2022)[35]	Survey data from 271 participants	Improved brand attitude and loyalty	Ease of use did not significantly affect outcomes
Sheetal et al. (2023)[36]	Semi-structured interviews with gamification experts	Promoted motivation and brand loyalty	Ethical challenges and manipulative risks identified
Tien Minh et al. (2023)[37]	Unified Theory of Acceptance and Use of Technology	Improved engagement, motivation, and shopping experiences	Adoption intention explains limited variance
Hermawan et al. (2023)[38]	Questionnaires analyzed with SmartPLS	Boosted engagement and word-of-mouth marketing	Focused mainly on influence and knowledge values
Dinh et al. n.d.[26]	Lean UX approach and A/B testing	Enhanced engagement particularly among gaming enthusiasts	Minimal engagement improvements observed
Kusumawardani et al. (2023)[39]	Survey and SEM analysis	Aligned gamification with social and utilitarian values	Recognition and hedonic motives lacked impact
Jia et al. (2024)[23]	Quantitative design with 313 participants	Improved recommendation acceptance	Utilitarian value overshadowed others
Rauh et al. n.d.[40]	Survey experiment with 973 consumers	Reduced return motivation and altered long-term behaviors	Focused more on extrinsic over intrinsic motivations
Munawaroh et al. n.d.[24]	Survey data from 384 Shopee users	Increased user engagement and positive customer behavior	Recognition lacked substantial impact
Sharifi Hashjin et al. (2024)[41]	Interpretive Structural Modeling	Enhanced engagement and aligned with sustainability goals	Requires ethical considerations in design
Ebrahimi et al. (2024)[42]	Survey with 357 participants analyzed with SEM	Improved brand awareness, loyalty, and consumer behavior	Social interaction was less emphasized
Semenda et al. (2024)[43]	Game theory and data-driven methodology	Optimized strategies in competitive markets	Complexity limits broad application

5. Extracted statistics

The bar chart (Figure 2) summarizes the measurable effects of gamification strategies on e-commerce outcomes. Recent studies show that key measures like as purchase frequency, engagement rates, customer loyalty, and sales performance rise by a large amount. For example:

- Purchase frequency grew by 116%, demonstrating gamification's capacity to promote repeat purchases.
- Engagement rates increased by 100%, demonstrating greater user involvement with gamified features.
- Customer loyalty increased by 150%, demonstrating the importance of rewards and challenges in developing enduring connections.
- Sales performance increased by 135%, demonstrating the strategic usefulness of gamification in delivering corporate goals.

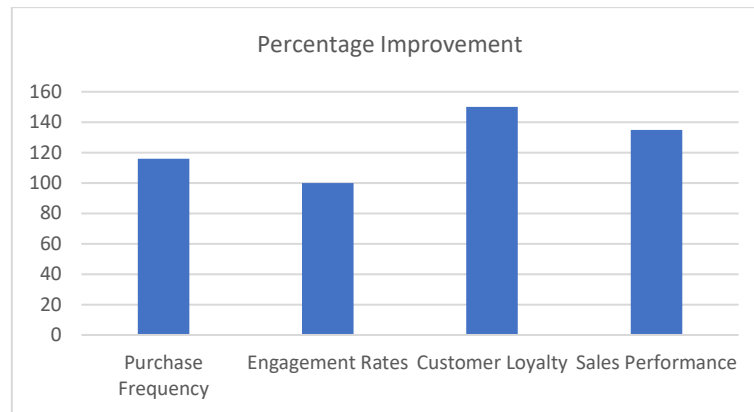


Fig. 2: Impact of Gamification Techniques on Key E-Commerce Metrics.

This graphic depicts percentage gains in important parameters, highlighting gamification's potential as a strategic tool in competitive digital markets. It provides a graphic overview of the findings presented in this section.

The pie chart (Figure 3) depicts the percentage contributions of several gamification elements—challenges, incentives, leaderboards, badges, and social interaction—to overall user engagement on e-commerce websites. Rewards account for the highest percentage (30%), followed by challenges (25%), and leaderboards (20%). Badges (15%) and social engagement (10%) make lesser but important contributions. These proportions emphasize the need of deliberately integrate several gamification features to increase user engagement.

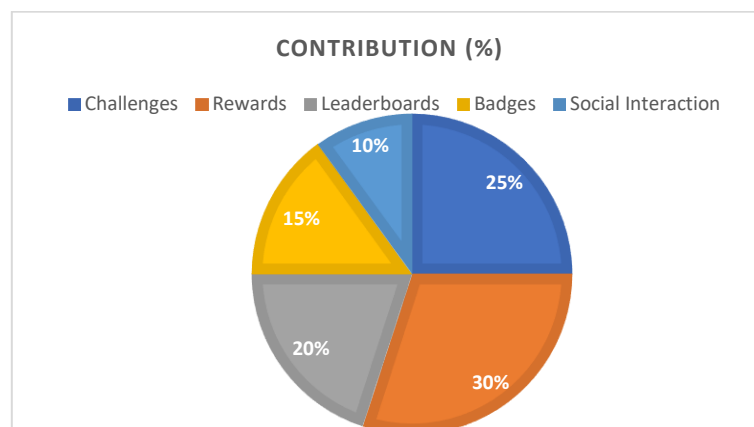


Fig. 3: Proportional Contributions of Gamification Elements to Overall Engagement.

Figure 4 illustrates the longitudinal trends in customer behavior influenced by gamification strategies from 2018 to 2024. Three key metrics are highlighted: retention growth rates, engagement levels, and satisfaction trends.

- Retention Growth Rates show a consistent increase over the years, reaching a 90% improvement in 2024. This trend underscores the effectiveness of gamification in fostering long-term customer loyalty through features like personalized challenges and rewards.
- Engagement Levels exhibit the most dramatic growth, peaking at 100% in 2024, driven by the integration of immersive technologies such as VR and interactive gamified experiences.
- Satisfaction Trends reflect steady improvement initially, reaching 85% by 2024, but exhibit signs of plateauing. This indicates that while gamification effectively enhances satisfaction, periodic updates and innovations are necessary to maintain momentum.

The line graph emphasizes the evolving impact of gamification on customer behavior, reinforcing the need for continuous optimization and the adoption of advanced, customer-centric strategies to sustain engagement, loyalty, and satisfaction over time.

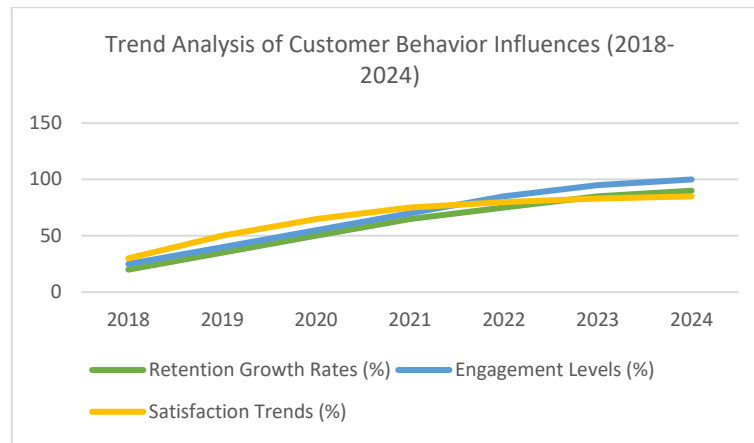


Fig. 4: Trend Analysis of Customer Behavior Influences (2018–2024).

The stacked bar chart (Figure 5) illustrates the comparative analysis of gamification preferences among three distinct age groups: Millennials, Gen Z, and Older Adults (50+). It highlights the varying effectiveness of gamification strategies across demographics based on engagement with different features:

- 1) Millennials: Representing the highest engagement levels (80%), Millennials show a strong preference for gamified mobile apps. This demonstrates their inclination towards interactive and rewarding digital experiences, as noted by [20].
- 2) Gen Z: Similar to Millennials, Gen Z exhibits high engagement with gamified mobile apps and interactive/social gamification (75%). This reinforces their demand for socially immersive and engaging gamified elements, as emphasized by [37].
- 3) Older Adults (50+): This group demonstrates a comparatively moderate engagement level, with 40% preferring gamification features, primarily due to limited adoption of advanced technologies, as suggested by [33].

Key Insights:

The chart underscores the importance of tailoring gamification strategies to specific age groups. Younger demographics (Millennials and Gen Z) favor interactive and social elements, while older adults require simpler and more accessible features to overcome technological barriers.

This data provides actionable insights for businesses to optimize gamification strategies based on demographic preferences, ensuring better customer engagement and retention.

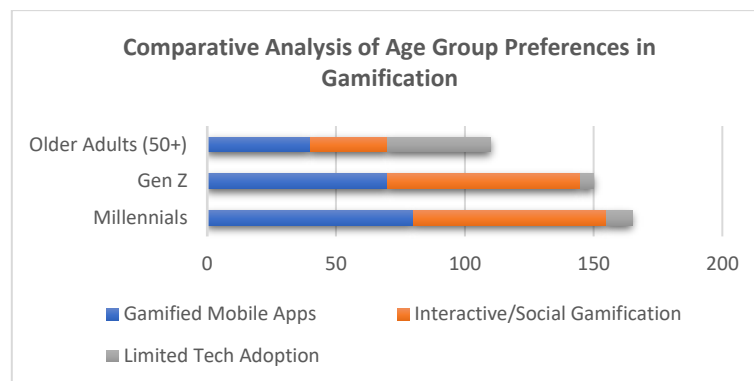


Fig. 5: Comparative Analysis of Age Group Preferences in Gamification.

6. Recommendations

Based on the synthesis of recent research, the following targeted recommendations are proposed to enhance the strategic use of gamification in e-commerce digital marketing:

1) Leverage Personalization and Social Interaction in Gamification Design

Gamification strategies should incorporate personalized elements such as tailored rewards, leaderboards, and challenges to resonate with diverse consumer demographics, particularly Millennials and Generation Z. Integrating social interaction features, such as collaborative challenges and peer recognition, can further enhance engagement and foster a sense of community among users [30][20].

2) Integrate Gamification with Sustainability and Ethical Practices

Employ gamified elements like badges, points, and challenges to promote eco-friendly behaviors and ethical consumption. Prioritize transparency in gamification design to maintain consumer trust, avoiding manipulative practices while aligning with broader sustainability goals to strengthen brand loyalty [31].

3) Adopt Iterative, Data-Driven Approaches

Utilize methodologies such as A/B testing and structural equation modeling (SEM) to continuously evaluate and refine gamification features. This ensures alignment with user expectations and enhances the effectiveness of gamified systems in meeting organizational objectives [21].

4) Extend Gamification Beyond Traditional E-commerce

Expand the application of gamification to include virtual reality systems, interactive loyalty programs, and cross-platform campaigns. Such innovations can create immersive and engaging experiences, broadening customer engagement and driving competitive advantage [30][21]. These recommendations provide actionable strategies for integrating gamification into e-commerce, emphasizing the importance of customer-centric, ethical, and innovative approaches to achieve long-term success.

7. Conclusion

This study offers a comprehensive review of gamification as a transformative strategy in digital marketing, specifically within the e-commerce sector. The findings underscore gamification's potential to significantly enhance customer engagement, foster brand loyalty, and drive sales by integrating game-like elements such as leaderboards, challenges, and rewards into digital marketing initiatives. These components not only create immersive and interactive consumer experiences but also address critical business objectives, including increasing purchase frequency and improving customer retention.

Four major themes emerged from the analysis: enhanced consumer loyalty, greater purchase frequency, reinforced brand loyalty, and the imperative of ethical design. Gamification has proven particularly effective among tech-savvy demographics such as Millennials and Gen Z, whose preferences align with interactive and personalized marketing experiences. Additionally, the study highlights the versatility of gamification, with applications extending beyond traditional e-commerce to include innovations such as virtual reality, sustainability-focused campaigns, and interactive loyalty programs.

However, the efficacy of gamification is not without limitations. Ethical concerns, including transparency, data privacy, and the risk of user fatigue, pose significant challenges to sustainable implementation. Poorly designed gamification systems can lead to short-term gains at the expense of long-term consumer trust and engagement. Moreover, the over-reliance on extrinsic motivators, such as points and badges, risks undermining intrinsic engagement, potentially leading to diminishing returns over time.

To address these challenges, this study proposes a set of actionable recommendations. These include the adoption of iterative, data-driven design approaches to refine gamified systems, the integration of personalization and social interaction features to enhance user experience, and the alignment of gamification strategies with broader ethical and sustainability objectives. Future research should focus on longitudinal studies to assess the long-term effects of gamification on consumer behavior and brand loyalty. Additionally, the integration of emerging technologies, such as artificial intelligence and augmented reality, offers promising avenues for creating more dynamic and adaptive gamification experiences.

In conclusion, while gamification holds immense promise as a tool for achieving competitive advantage in e-commerce, its success hinges on thoughtful, consumer-centric design and ethical execution. By bridging theoretical insights with practical applications, this study provides a foundation for advancing the scholarly discourse on gamification and supports its evolution into a sustainable and impactful marketing strategy.

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