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The Role of Gamification Elements in Digital Banking among Gen Z Customers: A Gender-Based Analysis

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Abstract

The phenomenon of using gamification in the banking sector in Indonesia began with the emergence of digital bankings. As digital bankinging continues to grow rapidly, competition is becoming increasingly tighter. To win this competition, digital bankinging utilizes various promotional strategies, including gamification. The purpose of this research is to test the influence of gamification elements on engagement. This study was conducted quantitatively with 155 respondents from digital bankinging (DB) users. Primary data was collected via questionnaires using Google Forms, a survey which was later analyzed descriptively. Data processing SEM-PLS reveals that element gamification is suggestn to be valuable and practical for engagement. The investigation has shown that all gamification elements had positive effects on engagement. Tests conducted on male and female consumers found that all gamification elements influenced engagement, with male customers.. Meanwhile, for female consumers, points, badge and challenges influence engagement, while levels do not.

Abstrak

Fenomena penggunaan gamifikasi di sektor perbankan di Indonesia berawal dari kemunculan bank digital. Seiring dengan pesatnya pertumbuhan perbankan digital, persaingan pun semakin ketat. Untuk memenangkan persaingan ini, perbankan digital memanfaatkan berbagai strategi promosi, termasuk gamifikasi. Tujuan penelitian ini adalah untuk menguji pengaruh elemen-elemen gamifikasi terhadap engagement. Penelitian ini dilakukan secara kuantitatif dengan 155 responden pengguna perbankan digital (DB). Data primer dikumpulkan melalui kuesioner menggunakan Google Forms, sebuah survei yang kemudian dianalisis secara deskriptif. Pengolahan data SEM-PLS menunjukkan bahwa elemen gamifikasi terbukti bernilai dan praktis untuk engagement. Hasil penelitian menunjukkan bahwa semua elemen gamifikasi memiliki efek positif terhadap engagement. Pengujian yang dilakukan pada konsumen pria dan wanita menemukan bahwa, semua elemen mempengaruhi engagement pada konsumen pria. Sementara itu, pada konsumen wanita, points, badges dan challenges memengaruhi engagement, sementara levels tidak.

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INTRODUCTION

Companies are continually seeking effective strategies to strengthen their long-relationships with customers through various strategies aimed at enhancing customer engagement. In recent years, gamification has been adopted in almost all areas of business due to its significant influence on motivating people and sustain their involment. Empirical studies show that gamification can increase student concentration (Zeng & Fisher, 2024) also increase student motivation (Rahmi et al., 2025), strengthen engagement (Alshammari, 2020; Oliveira et al., 2023) increase brand awareness (Lee & Jin, 2019). In the health sector, gamification has also been applied to encourage patients participation in physical activity (Muangsrinoon & Boonbrahm, 2019; Mitchell et al., 2017). These findings indicate that gamification is closely related to engagement, as users tend to remain involved in activities they perceive as enjoyable, meaningful, and valuable.

Along with the rapid development of digital technologies, gamification has been increasingly adopted by the banking sector, particulary as banks transitionn toward digital digital banking models (Chauhan et al., 2021). In Indonesia, the use of gamification in banking emerged alongside the growth of digital bankings, which operate primarily through digital platforms. As competition among digital bankings intensifies, to win this competition, digital banking utilizes various promotional strategies, including gamification. Gamification has become one such strategy, as it allows banks to embed game-like elements—such as points, badges, levels, and challenges—into non-game financial activities, thereby fostering customer engagement (Deterding, 2019). Gamification is especially relevant for Generation Z customers, who are characterized by high levels of digital literacy, strong connectivity to technology, and a preference for interactive and challenge-based activities (Dolot, 2018**;** Saxena & Mishra, 2021). Previous research in the financial sector claims that user experience in using gamification can increase engagement also the challenge of getting rewards makes consumers very challenged to conquer gamification games . The user experience is a complex phenomenon that includes feeling, emotion, behavior, realization, and sensation induced by gamification. Banks that fail to offer an impressive customer experience will be unable to compete because customer experience influences consumer behavior issues such as loyalty and satisfaction. Gamification is especially relevant for Generation Z customers, who are characterized by high levels of digital literacy, strong connectivity to technology, and a preference for interactive and challenge-based activities

Aligning with Indonesia's population census, Generation Z represents the largest demographic group, reaching approximately 27.94% of the total population, or around 74,93 million people. Prior research indicates that age plays a significant role in the adoption and effectiveness of gamification, with Generation Z demonstrating higher gamification acceptance scores compared to older cohorts(Çera et al., 2020). Generation Z's brain has a different architecture caused more by the external environment than by genetics. The way of thinking is faster with interactive visuals compared to auditory (Saxena & Mishra, 2021). Studies in digital banking contexts also reveal that Generation Z users tend to respond positively to gamified features, using them not only for transactional purposes but also for saving and investment-related activities (Rodrigues et al., 2013).

Beyond generational differences, gender has been identified as an important factor influencing how users perceive and respond to gamified systems. The conservative view concludes that games are a man's world. Women don't like games because they are perceived as rough games. Women spend less time playing games than men (Veltri et al., 2014). Research on gaming and gamification suggests that men tend to be more task- and achievement-oriented, while women are often more socially motivated and value enjoyment and usability (Bonanno & Kommers, 2008; Codish & Ravid, 2017; Veltri et al., 2014). However, due to the prevailing stereotype that gaming is primarily associated with men, women are often less motivated to engage in gaming activities because of concerns about negative social judgment from their surrounding environment (Lopez-Fernandez et al., 2019). Considering that gamification is not a game, this research aims to investigate the effect of gamification elements on engagement among digital banking customers and determine whether there are differences in the impact of gamification on men and women.

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The findings can be used by banks in creating marketing strategies, especially those related to gender

Although previous research has demonstrated the positive role of gamification in enhancing engagement, empirical evidence in the context of digital banking remains limited, particularly regarding the differentiated effects of individual gamification elements. Furthermore, gender-based analyses of gamification in digital banking are still underexplored, especially among Generation Z users who dominate digital banking adoption. Addressing this gap, the present study aims to analyze the influence of key gamification elements—points, badges, levels, and challenges—on customer engagement in digital banking and to examine whether these effects differ between male and female users. The findings are expected to contribute to the literature on gamification and digital banking while providing practical insights for banks in designing gender-sensitive gamification strategies

Bank strongly emphasizes digitalization in banking for several reasons, including cost savings, convenience, efficiency, and client pleasure. One way to increase promotion in marketing content is through gamification. Research by Mekler et al. (2017) suggest that in this particular study context, points, levels and leaderboards functioned as extrinsic incentive to motivated costumer. Gamification elements consist of various components, but in this research, only the most frequently used elements were employed, namely points, levels, challenges, and badges (Da Rocha Seixas et al., 2016; Codish & Ravid, 2017)

Points are used to reward users for their achievements and also to stimulate user participation across various dimensions and categories. Points and scores were the most common type of reward for user actions (Lewis et al., 2016). Prior studies have shown that point-based reward systems can increase engagement by providing users with a sense of achievement and measurable outcomes (Koppitsch & Meyer, 2022). If the goal is to provide feedback, everyone's progress should not be shown to others. If the goal is to motivate, then the gains of each gamification user can be shared. In digital bankinging, points accumulated through saving or transaction activities may enhance customer engagement by making financial activities more interactive and goal-oriented.

H_1: Points influence engagement to the use of digital banking services

Level shows the user's progression when following the game to achieve a goal, within a gamified system. The higher the level, the greater the respect and status. Levels are typically defined as threshold points, allowing users to level up automatically based on their participation. By signaling advancement and status, levels can enhance users' feelings of competence and mastery, which are important drivers of engagement (Mekler et al., 2013). In a digital banking, achieving a level-up can create pride among customers who reach it. In gamified environments, leveling-up mechanisms provide long-term goals that motivate users to remain active and continue their participation (Saleem et al., 2022; Mekler et al., 2017). In the context of digital bankinging, higher levels may symbolize financial progress, such as increased savings or activity, which can strengthen users' emotional attachment and engagement with banking services.

H_2: Levels influence engagement in the use of digital banking services

Challenges are designed as specific missions or tasks that users are encouraged to complete within a gamified system. By providing clear goals and rewards, challenges can stimulate users' curiosity and sustain their interest over time (Oliveira et al., 2023). Previous studies indicate that challenges enhance engagement by creating a sense of excitement and accomplishment when goals are achieved (Da Rocha Seixas et al., 2016). In digital banking, challenges related to saving or transaction activities may encourage customers to actively participate and remain engaged with banking applications.

H_3: Challenges influence engagement in the use of digital banking services.

Badges function as symbolic representations of users' achievements and serve as visual indicators of accomplishment within gamified systems. They can enhance engagement by providing recognition and reinforcing users' sense of identity and competence (Cruz et al., 2017). Digital badges have also been shown to motivate continued participation, as users perceive them as

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evidence of success and progress (Hurst, 2015). Earn digital badges as a result of participating in online engagements, achieving performance, and succeeding in informal and formal assessments. Displaying badges on personal web pages or electronic portfolios is a strategy used to build one's identity and reputation, specifically highlighting a person's knowledge and skills. The badges one earns can be compared to the badges earned by other players. In particular, not all players agree whether badges are an indicator of a person's skills (Cruz et al., 2017). In digital banking services, badges earned through saving or financial activities may increase engagement by validating customers' efforts and encouraging sustained interaction with the platform. Regarding the use of badges in digital banking services, we hypothesize that:

H_4: Badges influence engagement in the use of digital banking services

Engagement indicates the passion and emotional involvement in participating and completing learning activities. Motivation and engagement are two closely related concepts that often overlap in areas of intrinsic motivation and cognitive engagement. Despite this strong link between motivation and engagement, the two terms are not synonymous, and the presence of one does not necessarily dictate the occurrence of the other. The differences between men and women in playing games can be seen from the hardware point of view, which concludes men show full confidence in gaming devices, while women are more hesitant, because many women are less familiar with the use of technology. Furthermore, it was also concluded that female game players focus more on ease of use and enjoyment and fun playing games (Bonanno & Kommers, 2008). Apart from that, it mentions women interested in games that involve long-term relationships based on social factors and norm. Meanwhile, from a gamification perspective, not many people pay attention to this difference. Thus, it is very interesting to investigate the influence of gamification elements from the perspective of gender differences.

METHOD

The total number of respondents was 201 people, with 155 being digital banking users, while 46 were not. Although the main aim of this research is to examine digital banking users, to deepen the discussion further, non-users continue with questions about why they do not use digital bankings. The type of data used is primary data obtained directly through online questionnaires distributed via social media (WhatsApp, X, Instagram). The questionnaire consists of two parts: demographic information and statements measuring variables using a 1-5 Likert scale ("Strongly Disagree" to "Strongly Agree").

Table 1. Demographic Profile of the respondents

Demografic Profile		DB User	%	Non DB User	
Gender	Male	68	43.9	25	54.3
	Female	87	56.1	21	45.7
	Total	155	100	46	100.0
Age	19-28	104	67.1	10	21.7
	29-44	45	29.0	19	41.3
	45-55	6	3.9	17	37.0
	Total	155	100	46	100.0
Income	< 5.000.000	59	38.1	5	10.9
	5.000.000 - 10.000.000	37	23.9	7	15.2
	10.000.500 - 15.000.000	39	25.2	10	21.7
	15000500 - 25.000.000	16	10.3	16	34.8
	> 25.000.000	4	2.6	8	17.4
	Total	155	100	46	100.0

Source: Author (2025)

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The majority of DB profile respondents were women (56.1%), slightly over half. In terms of age, we divided into three groups. The first group, who were Gen Z (between 19 and 28 years old), were just over half, with 67.1%, respectively. This finding is in line with research by (Çera et al., 2020) that Gen Z has a higher gamification score than Gen X. The second group was 29 to 44 years old, with 29% and only 3.9% for the 45-55 years old group. Furthermore, 38.1% of DB users' income is less than 5,000,000, and only 2.6% have income above 25,000,000. The respondent data used are summarized in Table 1.

RESULTS AND DISCUSSION

The analytical method used in this research is structural equation modeling with the alternative partial least squares method as an aid in concluding. In structural equation modeling, there are two types of models formed, namely the measurement model (outer model) and the structural model (inner model). Evaluation of the measurement model in SEM-PLS is carried out through convergent validity and discriminant validity. According to Hair, et al (2014; 103), the loading factor is expected to be greater than 0.7, and manifest variables with a loading factor of less than 0.4 must be reduced from the measurement model. Then, a composite reliability value between 0.70 and 0.90 is considered satisfactory (Hair et al., 2014, p. 102), as indicated by the loading factors, which have a loading factor value of less than 0.70. POI 1 = 0.7, BAD 3 = 0.633, and ENG 7 = 0.696; it must be dropped from the model.

Based on the results of the first order, it can be seen that the loading factor value for each indicator is greater than 0.70. This means that all indicators are valid as measuring tools for their respective dimensions. Then, the composite reliability (CR) value for each dimension is also greater than 0.70, indicating that these indicators are consistent in measuring their respective dimensions. Then the average variance extracted (AVE) value is greater than 0.50. The structural model is a model that connects exogenous latent variables with endogenous latent variables. The structural model test values using Discriminant Validity, Fornell concludes that all the roots of AVE in each construct are greater than the correlations with other variables, as shown in Table 3. In evaluating the proposed model, a nonparametric bootstrap resampling approach with 201 samples was employed. The results of the structural model are presented in Figure 1.

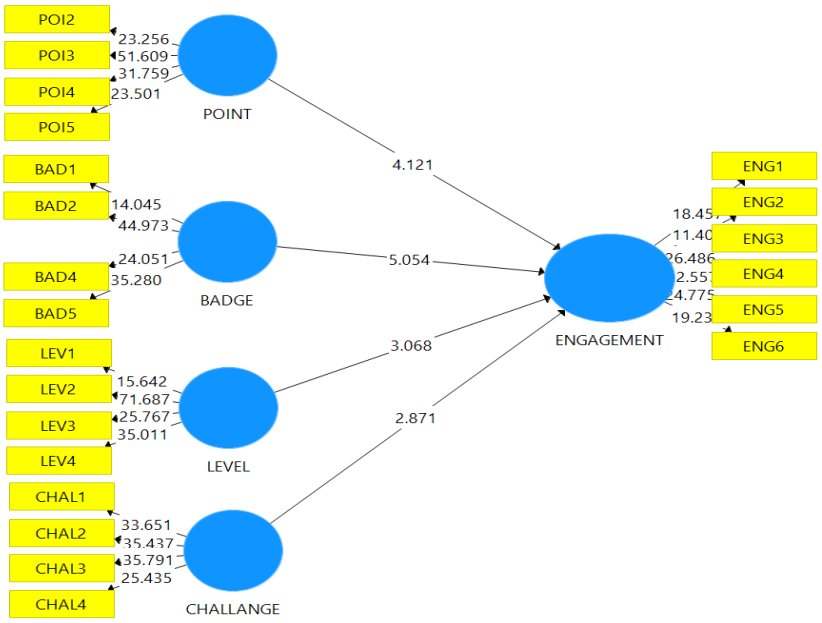

Figure 1. Model Structure

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Table 2. Convergent Validity and Reliability

Variabel	Item	λ	α	rho_A	*CR*	*AVE*
Point (POI)	POI 2	0.831	0.878	0.883	0.917	0.734
	POI 3	0.903				
	POI 4	0.881				
	POI 5	0.808				
Badge (BAD)	BAD 1	0.760	0.857	0.867	0.903	0.701
	BAD 2	0.890				
	BAD 4	0.831				
	BAD 5	0.863				
Level (LEV)	LEV 1	0.804	0.895	0.900	0.927	0.762
	LEV 2	0.935				
	LEV 3	0.868				
	LEV 4	0.880				
Challenge (CHAL)	CHAL 1	0.885	0.893	0.897	0.926	0.757
	CHAL 2	0.892				
	CHAL 3	0.851				
	CHAL 4	0.851				
Engage-ment (ENG)	ENG 1	0.773	0.888	0.893	0.915	0.643
	ENG 2	0.729				
	ENG 3	0.855				
	ENG 4	0.836				
	ENG 5	0.830				
	ENG 6	0.781				

Noted: α= Cronbach's Alpha; CR= Composite Reliability; AVE= Average Variance Extracted; λ = Outer Loading.
Source: valid source (2025)

Table 3. Discriminant Validity Fornell

	POINT	BADGE	LEVEL	CHALLENGE	ENGANGEMENT
POI2	0.831	0.362	0.515	0.500	0.564
POI3	0.903	0.450	0.462	0.520	0.626
POI4	0.881	0.416	0.475	0.550	0.653
POI5	0.808	0.390	0.551	0.479	0.568
BAD1	0.291	0.760	0.465	0.444	0.493
BAD2	0.411	0.890	0.438	0.464	0.643
BAD4	0.442	0.831	0.347	0.514	0.595
BAD5	0.426	0.863	0.412	0.475	0.633
LEV1	0.384	0.453	0.804	0.430	0.532
LEV2	0.526	0.395	0.935	0.527	0.616
LEV3	0.476	0.449	0.868	0.465	0.600
LEV4	0.624	0.427	0.880	0.583	0.641
CHAL1	0.501	0.526	0.529	0.885	0.600
CHAL2	0.522	0.372	0.517	0.892	0.527
CHAL3	0.570	0.554	0.406	0.851	0.676
CHAL4	0.482	0.490	0.567	0.851	0.621
ENG1	0.601	0.509	0.574	0.552	0.773
ENG2	0.529	0.388	0.408	0.558	0.729
ENG3	0.704	0.541	0.585	0.563	0.855
ENG4	0.498	0.741	0.570	0.551	0.836
ENG5	0.544	0.582	0.689	0.477	0.830
ENG6	0.516	0.621	0.452	0.689	0.781

Source: Author (2025)

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Table 4. Summary of The Direct and Indirect Effects

Hypotheses	*Path*	*β*	*SD*	*T*-value	*P*-Value	R^2	Result
H1	POI→ENG	0.285	0.069	4.121	0.000	74.9%	Supported
H2	BAD→ENG	0.347	0.069	5.054	0.000		Supported
H3	LEV→ENG	0.234	0.076	3.068	0.002		Supported
H4	CHAL→ENG	0.201	0.070	2.871	0.004		Supported

Noted: SD= Standard Deviation; β= Path Coefficient; R^2=R-square. Source: valid source (2025)

Through the R Square value, it can be seen that points, badges, levels, and challenges have an influence of 74.9% on engagement, while other factors outside the model explain the remaining 25.1%. The study's findings imply that gamification plays a substantial role in enhancing customer engagement. *First,* points have a significant and positive influence on engagement. The coefficient is 0.285 with a prob value (0.000) <alpha 5%, meaning the effect is significant. H_1 is accepted. Points are used to reward users for their achievements and also to encourage user participation. This research is in line with research (Mbama et al., 2018) which concluded that in developed countries the use of points in DB has an influence on customer experience and financial performance, with Implications of interactive marketing. Giving points at DB Indonesia also provides a pleasant experience for consumers. *Second,* badges have a significant and positive influence on engagement. The coefficient is 0.347 with a prob value (0.000) <alpha 5%, meaning the effect is significant. H_2 is accepted. The badge in DB is as proof of customer achievement in saving. This achievement was obtained in stages. This thing becomes the uniqueness of the badge elements on the DB that can be interesting customer interest in saving. Previous research by Rimenda et al. (2022) concluded that badges are the element that most influences consumers' desire to save. Online badges such as those awarded by DB Indonesia are a visual representation and validation of achievements. (Perkins & Pryor, 2021).

Third, level has a significant and positive influence on engagement. The coefficient is 0.234 with a prob value (0.002) <alpha 5%, meaning the effect is significant. H_3 is accepted. At gamification, a level refers to a progress indicator, a specific stage or tier. When DB customers enter a higher level, it indicates their savings are increasing. *Fourth,* challenges have a significant and positive influence on engagement. The coefficient is 0.201 with a prob value (0.004) <alpha 5%, meaning the effect is significant. H_4 is accepted.

The findings demonstrate that points, badges, levels, and challenges have significant positive effects on customer engagement in digital banking. This result supports prior studies suggesting that gamification elements can enhance engagement by making non-game activities more interactive and goal-oriented (Chauhan et al., 2021; Mekler et al., 2017). Implementing gamification in DB imsuggests customer experience and increases customer engagement. Gamification is effective in increasing engagement in online programs. In digital bankinging contexts, gamification transforms routine financial activities into structured experiences that provide feedback, recognition, and progression, which may encourage users to remain engaged with banking applications.

The relatively high explanatory power of the model indicates that gamification elements play an important role in shaping engagement. However, this does not imply that gamification is the sole determinant of engagement, as other psychological, technological, and contextual factors may also influence user behavior. The fact that gamification elements cannot be implemented in the same way to all applications. Each implementation has different customer-based goals, whether based on gender, age or technology, so each gamification implementation is different. Thus, gamification should be viewed as a complementary engagement strategy rather than a standalone solution. When testing continued by separating the data from male and female respondents, results were obtained.

The gender-based analysis reveals that all gamification elements significantly influence engagement among male customers. This finding aligns with previous research indicating that men tend to be more achievement- and task-oriented in gamified environments (Veltri et al., 2014; Codish & Ravid, 2017). Elements such as points, levels, and badges provide clear indicators of progress and

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achievement, which may resonate strongly with male users' preference for measurable outcomes and status recognition. These findings suggest that the conservative opinion that games are a world for men is also suggestn when gamification is tested on men. All elements of gamification are suggestn to influence engagement in men. It can be concluded that games and gamification have the same influence on men is a representation of an accomplishment, task, interest, or affiliation that visually explains the process and result of an activity.

Table 5. Summary of the Direct and Indirect Effects of Man

Path	*β*	*SD*	*T*-value	*P*-value	R^2
POI→ENG	0.264	0.115	2.380	0.017	0.86%
BAD→ENG	0.417	0.098	4.091	0.000	
LEV→ENG	0.184	0.094	2.143	0.032	
CHAL→ENG	0.207	0.098	2. 049	0.041	

Source: valid source (2025)

Among the examined elements, badges show the strongest influence on engagement for male users. Badges symbolize accomplishment and responsibility, which may align with masculine identity and achievement-oriented motivations, thereby reinforcing engagement in digital banking activities.

Table 6. Summary of the Direct and Indirect Effects on Women

Path	*β*	*SD*	*T-value*	*P-value*	R^2
POI→ENG	0.255	0.086	2.960	0.003	0.69%
BAD→ENG	0.298	0.107	2.770	0.006	
LEV→ENG	0.171	0.126	1.354	0.176	
CHAL→ENG	0.333	0.106	3.154	0.002	

Source: valid source (2025)

In contrast, the results for female customers indicate that points, badges, and challenges significantly influence engagement, while levels do not show a significant effect. This finding suggests that female users may respond differently to certain gamification mechanisms. Prior studies have shown that women tend to place greater emphasis on enjoyment, usability, and meaningful participation rather than hierarchical status or competitive ranking (Bonanno & Kommers, 2008; Lopez-Fernandez et al., 2019). This research suggests that gamification is indeed different from games, encouraging women to be enthusiastic about playing and saving at the same time.

Challenges may be particularly engaging for female users because they provide clear goals and a sense of accomplishment without emphasizing competition or status. Similarly, badges function as symbolic recognition rather than hierarchical indicators, which may better align with socially oriented and experiential motivations. The non-significant effect of levels suggests that tiered progression systems may be less relevant for female users in digital banking contexts, especially when such systems emphasize status rather than experiential value.

Interestingly, the findings challenge the conventional view that gaming-related mechanisms are predominantly suited for male users. While gaming literature often suggests that men are more attracted to competitive and status-driven systems, the present study demonstrates that gamification in digital banking can also effectively engage female users. This supports the argument that gamification differs fundamentally from games, as it emphasizes goal achievement and meaningful interaction rather than competition alone. Consequently, gamification can function as an inclusive engagement strategy when designed to accommodate diverse user preferences.

Although the study emphasizes generation Z as a key user segment, it is important to acknowledge that the sample also includes respondents from older age groups. Nevertheless, the

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dominance of generation Z respondents suggests that the findings largely reflect the preferences of digitally native users. Prior research indicates that generation Z is highly receptive to interactive and gamified features due to their familiarity with digital technologies (Çera et al., 2020). Based on the weaknesses in the selection of respondents in this study, future research may benefit from focusing on a more homogeneous age group, to differentiate the influence of gamification between generations.

CONCLUSIONS AND SUGGESTION

This study examined the role of gamification elements in enhancing customer engagement in digital banking, with particular attention to gender differences. The findings indicate that gamification elements—points, badges, levels, and challenges—collectively play an important role in shaping customer engagement in digital bankinging services. These results support previous studies suggesting that gamification can function as an effective engagement strategy by making digital interactions more structured, interactive, and meaningful.

The gender-based analysis reveals notable differences in how gamification elements influence engagement. It is essential to note that the process of building gamification strategies must also be aligned with promotional purposes. In this study, when testing differentiated between men and women. For male customers, all examined gamification elements significantly enhance engagement, suggesting that achievement-oriented and progression-based mechanisms resonate strongly with male users. In contrast, for female customers, points, badges, and challenges significantly influence engagement, while levels do not. This finding implies that hierarchical progression systems may be less relevant for female users in digital bankinging contexts, whereas elements emphasizing recognition, goal completion, and experiential value appear to be more engaging.

We also emphasize that age was a key factor in the study's results. Since its inception, gen Z has been enthusiastic about using gamification, as they are highly familiar with technology. Gamification stimulated them to do their activities to receive badges. For them, receiving bangles is a prestige. This finding strengthens the characteristics of gen Z, both men and women, who really like challenges.

From a practical perspective, the findings highlight the importance of designing gamification strategies that are sensitive to user characteristics, particularly gender differences. Rather than applying uniform gamification designs, digital bankings may benefit from tailoring gamification elements to align with diverse user preferences. Such an approach may enhance engagement more effectively and contribute to imsuggestd customer experiences.

This study also acknowledges several limitations. First, the data were collected using a cross-sectional survey design and self-reported measures, which restrict causal interpretations of the findings. Second, although gen Z represents the dominant group in the sample, respondents from other age groups were also included. Therefore, interpretations related to generational characteristics should be considered with cautio

Finally, a key contribution to emphasize is the discovery of the relevance and benefits of gamification as an engagement strategy. Discussion between decision makers in banking is very necessary to support the use of gamification in banking promotions. Future research is encouraged to focus on more homogeneous age groups to further explore generational differences in gamification effectiveness. In addition, qualitative or experimental approaches may provide deeper insights into how specific gamification elements influence user engagement over time. Further studies may also examine gamification practices within individual banks to capture contextual differences in design and implementation. As digital banking continues to evolve, future research may explore how emerging technologies, such as artificial intelligence, can be integrated into gamification strategies to enhance personalization and engagement.

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