NGHIÊN CỨU TÁC ĐỘNG CỦA TRÒ CHƠI HÓA ĐẾN SỰ GẮN KẾT CỦA NGƯỜI DÙNG THẾ HỆ Z VỚI ỨNG DỤNG NGÂN HÀNG SỐ

Vũ Trà My[1], Đặng Thùy Anh, Nguyễn Thị Minh Hằng, Nguyễn Ngọc Minh
Sinh viên K61 CLC Kinh tế đối ngoại - Viện Kinh tế & Kinh doanh quốc tế
Trường Đại học Ngoại thương, Hà Nội, Việt Nam

Trần Minh Đức
Sinh viên K61 Kinh tế quốc tế - Viện Kinh tế & Kinh doanh quốc tế
Trường Đại học Ngoại thương, Hà Nội, Việt Nam

Trần Sĩ Lâm
Giảng viên Viện Kinh tế & Kinh doanh quốc tế
Trường Đại học Ngoại thương, Hà Nội, Việt Nam

Tóm tắt

Trong kỷ nguyên chuyển đổi số, trò chơi hoá đã trở thành một chiến lược quan trọng nhằm nâng cao mức độ gắn kết của người dùng. Nghiên cứu này xem xét tác động của các yếu tố trò chơi hoá đến sự gắn kết người dùng thế hệ Z với ứng dụng ngân hàng số và các kết quả tiếp thị. Áp dụng Lý thuyết về Mô hình Tự hệ thống Phát triển Động lực (SSMMD) và phân tích Mô hình Phương trình Cấu trúc Bình phương Tối thiểu Riêng phần (PLS-SEM) trên 398 phản hồi, kết quả cho thấy trò chơi hoá làm tăng sự gắn kết của người dùng thông qua việc đáp ứng các nhu cầu về năng lực, quyền tự chủ và sự liên quan. Cuối cùng, nghiên cứu này đưa ra một số hàm ý quản trị nhằm nâng cao sự gắn kết của người dùng ngân hàng số thông qua việc cải thiện các yếu tố trò chơi hóa để phù hợp hơn với nhu cầu của người dùng.

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[1] Tác giả liên hệ, Email: k61.2212150121@ftu.edu.vn

THE IMPACT OF GAMIFICATION ON GENERATION Z'S ENGAGEMENT WITH DIGITAL BANKING APPLICATIONS

Abstract

In the era of digital transformation, gamification has become a key strategy for enhancing user engagement. This study examines the impact of gamification elements on user engagement among Generation Z with digital banking applications and marketing outcomes. By applying the Self-System Model of Motivational Development (SSMMD) theory and analyzing data from 398 responses using Partial Least Squares Structural Equation Modeling (PLS-SEM), the findings indicate that gamification enhances user engagement by satisfying the needs for competence, autonomy, and relatedness. Furthermore, user engagement positively influences continued use intention, word-of-mouth (WOM) marketing, and favorable app ratings. Finally, this study provides several managerial implications to enhance user engagement in digital banking by improving gamification features to better meet user needs.

Keywords: gamification, user engagement, digital banking apps, self-system model of motivational development

1. Introduction

In this day and age, there is an increasing demand for the convenient financial services which significantly contributes to the growth of digital banking. However, many banks have recently activated their own digital banking apps, each of them should offer several value-added features to enhance customer engagement. One of the notable trends is the integration of some gamified elements in banking apps such as challenges, rewards,... which are able to encourage customers to interact more frequently, resulting in more customer commitment.

Generation Z, unlike previous generations, has grown up fully in a digital world, therefore, they are highly accustomed to digital services of all aspects. They are open to innovative experiences that are able to reshape the customer trends. However, while they embrace novelty, Generation Z also set high expectations for user experience quality, not only smooth functionality, but also other features,... To attract and retain Gen Z customers, businesses must focus on innovation and experiences.

In this highly competitive market, some digital banks have integrated various gamification elements to enhance user experience and increase customer engagement, especially among Generation Z. For aforementioned reasons, our group proposes a research topic "**The impact of Gamification on Generation Z's engagement with digital banking applications.**" This study aims to evaluate how different gamification features will fulfill Generation Z's psychological needs which are crucial to enhance their engagement and lead to some following behaviors.

2. Literature review

2.1. Foreign research studies

In the international context, a number of studies have explored the impacts of gamification on customer engagement across various sectors including mobile apps, education, to name but a few. A research conducted by Koivisto & Hamari (2019) concluded that the achievement and social related elements in gamification have a positive impact on brand engagement which further enhance the brand equity. Achievement, immersion and social related gamification elements also contribute to fulfill the customers' basic psychological demand which ultimately promote customer engagement, leading to later committed behaviors (Bitrián, Buil, & Catalán, 2021).

Gamification in digital banking apps has demonstrated potential in increasing customer interaction. By introducing game-like features including quests, social graphs, levels,..., they will have substantial impacts on the hedonic value and utilitarian value, resulting in significant effects on customer loyalty (Ratu Annisa Gandasari et al., 2023). Furthermore, gamification elements including badges, points, leaderboard,... also plays a role in promoting customer experience (Jomon Jose, 2023). However, for customer engagement variables, which are widely mentioned in numerous research, most of them consider it as an intermediary factor rather than defining it explicitly.

2.2. Domestic research studies

In Vietnam, many studies have analyzed the effect of gamification on the feeling of engagement, especially in sectors of education, human resources or digital marketing. Gamification elements including the happiness, challenges and competition have proved to have a positive impact on classroom activities which will enhance student's engagement at the class (Le Thai Phuong, 2024). In terms of e-commerce, four gamification elements including Reward, Control, Capacity development, Sociality, can further promote customer's purchase intention on Shopee application (Cuong et al., 2023).

In the financial sector, there are several significant studies about the impacts of gamification on customers, especially in the field of e-wallets such as MoMo, ZaloPay, and VNPay. Cao & Vu (2023) concluded that these gamification elements act as stimuli that create emotional and cognitive interactions, which contribute to increasing customer loyalty to the brand. However, despite the rapid development of digital banking and research on their effect on customer relationships is largely limited. Some factors strongly affect the banking app usage intention are performance, trust, personalization, etc. (Huyen, 2024). Nevertheless, what specific elements of the app contribute to the feeling of such mentioned factors have not been stated clearly.

2.3. Research gap

Whereas the foreign research has highlighted the effectiveness of gamification in digital banking, those studies on its impact in Vietnam remain scarce. Domestic research primarily focuses on digital banking adoption or some related digital payment methods but an in-depth analysis of how gamification influences customer engagement has been lacking. Hence, this study

aims to address this gap by evaluating the role of gamification elements in banking apps for strengthening Gen Z's engagement in the applications in Vietnam.

3. Theoretical framework and research hypotheses

3.1 Theoretical framework

3.1.1 Gamification

Gamification refers to the application of game-design elements and principles in non-game contexts to enhance user engagement, motivation, and behavior (Werbach, 2014). This strategy has gained prominence in various sectors, including education (Fitria, 2023), commerce (Costa and Moises, 2021), marketing and advertising (Xi and Hamari, 2020) as a tool to improve user experience and sustain interaction. In the context of digital banking applications, gamification typically involves features such as rewards, leaderboards, challenges, and progress tracking, which aim to create an engaging experience that motivates users to interact with the app more frequently and meaningfully. For Generation Z, the use of gamification may hold particular significance in shaping their engagement patterns, given their familiarity with interactive and instant gratification-based experiences (Saxena and Mishra, 2021).
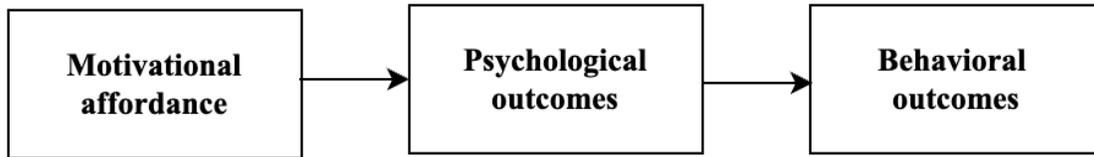
3.1.2. Motivational affordance

Motivational affordance, according to Zhang (2008), is the potential of a system to support and enhance users' motivations through its design elements. The concept of affordances fits well within gamification discussions, as it implies that users actively choose to interact with the system and its features, rather than perceiving the system elements as something they are required to engage with automatically (Huotari and Hamari, 2012). These affordances could include tangible rewards, social recognition, or the satisfaction of achieving personal milestones.

3.1.3. The self-system model of motivational development (SSMMD)

The SSMMD (Connell, 1990; Connell & Wellborn, 1991; Skinner et al., 2008) built upon Self-Determination Theory (SDT) (Deci & Ryan, 1985), represents a significant theoretical framework in psychology that explains how contextual factors influence individuals' self-perceptions, which subsequently affect their engagement and achievement in various domains. It emphasizes that individuals are motivated to engage in activities that fulfill their basic psychological needs for autonomy, competence, and relatedness (which are also key components of SDT). Competence relates to the feeling of effectiveness and mastery that a user experiences when engaging with a system or activity (White, 1959; Deci, 1975). Autonomy concerns the sense of control and choice that a user has over their actions and decisions (Deci & Ryan, 1980). Finally, relatedness is the need for connection, belonging, and meaningful social interactions with others (La Guardia et al., 2000; Ryan & Deci, 2001). The SSMMD posits that engagement occurs when these essential psychological needs are satisfied. Conversely, when they are unmet, the individual experiences disengagement.

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3.2 Hypothesis development

According to Hamari, Koivisto & Sarsa (2014), the conceptualization of gamification in relation to literature on motivational affordances in information system research can be broken down into three parts: (1) the implemented motivational affordances, (2) the resulting psychological outcomes, and (3) the further behavioral outcomes.

Figure 1. Conceptualization of gamification

Source: Retrieved from Hamari, Koivisto & Sarsa (2014)

Combining this conceptualization with the framework of SSMMD, we propose a research model that integrates motivational affordances in the gamified system, which will yield psychological outcomes (including the need for satisfaction for autonomy, competence, and relatedness), leading to user engagement and ultimately behavioral outcomes.
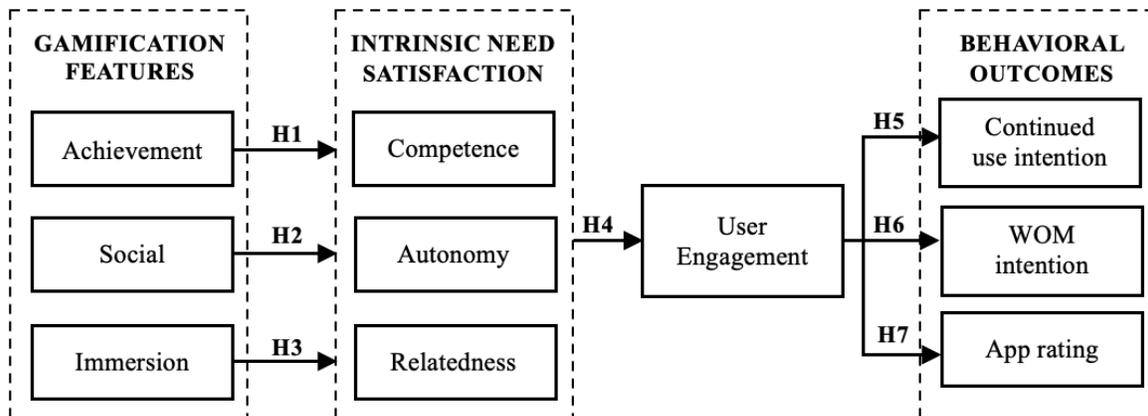
Figure 2. Proposed model

Source: Authors' compilation

Achievement-oriented elements, such as scores, badges, and leaderboards, are linked to the satisfaction of competence and autonomy (Koivisto & Hamari, 2019; Xi & Hamari, 2019). These elements encourage users to complete tasks, progress through levels, and earn rewards. Social-oriented elements, such as social networking, teams, and competition, primarily fulfill the need for relatedness (Papadopoulos et al., 2024), while also contributing to competence and autonomy

(Sailer & Homner, 2019). Finally, immersion-oriented elements, such as avatars, customization, and role-playing, help satisfy competence and autonomy needs (Koivisto & Hamari, 2019).

Based on these observations, we propose the following hypotheses:

- H1: The user's interaction with achievement/ progression-oriented elements in the app helps to satisfy his/her needs for (a) competence, (b) autonomy and (c) relatedness.

- H2: The user's interaction with social-oriented elements in the app helps to satisfy his/her needs for (a) competence, (b) autonomy and (c) relatedness.

- H3: The user's interaction with immersion-oriented elements in the app helps to satisfy his/her needs for (a) competence, (b) autonomy and (c) relatedness.

According to SSMMD, fulfilling psychological needs in specific contexts promotes engagement, which is reflected in behavioral, cognitive, and affective outcomes (Connell & Wellborn, 1991). Previous studies, such as Mekler et al. (2017), have shown that badge-based gamification increases engagement, and Xi & Hamari (2020) found that fulfilling psychological needs enhances brand engagement and brand equity.

- H4a: The satisfaction of the need for competence has a positive impact on user engagement.
- H4b: The satisfaction of the need for autonomy has a positive impact on user engagement.
- H4c: The satisfaction of the need for relatedness has a positive impact on user engagement.

According to Hamari, Koivisto & Sarsa (2014), motivational affordances satisfy psychological needs and result in psychological outcomes, which will lead to behavioral outcomes in the end. In our research, we particularly examined three outcomes: continued intention to use the app, word-of-mouth (WOM), and users' ratings of the app.

- H5: Users' engagement with the app has a positive effect on their continued use intention.
- H6: Users' engagement with the app has a positive effect on their WOM intention.
- H7: Users' engagement with the app has a positive effect on their ratings of the app.

4. Research methodology
4.1. Measurement

The measurement scales used in this study were based on a 5-point Likert scale adapted from previous research. Specifically, user interactions with achievement, social, and immersion elements were measured following Xi & Hamari (2019). The satisfaction of competence, autonomy, and relatedness needs was assessed using the frameworks of Xi & Hamari (2019) and Bitrián et al. (2021). User engagement was measured using the UES-SF scale proposed by O'Brien et al. (2018). Lastly, the study includes four control variables: gender, age, and usage frequency. The use of control variables helps mitigate endogeneity issues and enhances the robustness of findings by accounting for external factors influencing user engagement.

4.2. Data collection and analysis

The survey was conducted from December 2024 to February 2025, targeting Gen Z users who actively use mobile banking applications and engage with gamified features within these apps. Data collection was carried out through an online questionnaire distributed via Google Forms. The survey link was shared across various social media platforms, including Facebook, Messenger, Zalo, to reach potential respondents. A convenience sample of 398 participants was obtained, which meets the requirements for Partial Least Squares Structural Equation Modeling (PLS-SEM).

This study employs a quantitative research approach using Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the relationship between Gamification and User Engagement in Banking Apps. PLS is suitable for a complex model which includes both formative and reflective measures.

5. Data analysis and results
5.1. Descriptive statistics

After checking and cleaning the data, the final sample consists of 398 observations. The gender distribution indicates that nearly 61.0% of the respondents were female, while 39.4% were male. According to the age, the majority of participants were between 18 and 22 years old, accounting for 342 respondents, which corresponds to 85.9% of the total sample. In terms of banking app usage, 66.1% of respondents reported using banking applications in their daily activities, suggesting a strong integration of digital financial services among the surveyed individuals.

5.2. Analysis of the measurement model

Before analyzing the structural model, this research validated the measurement model, which included both reflective and formative measurements.

The reflective measurement model for the first-order dimensions was assessed using outer loadings, which ranged from 0.727 to 1, all exceeding the 0.7 threshold, confirming reliable indicator measurement (Hair et al., 2016). Cronbach's Alpha and Composite Reliability (CR) were also used to evaluate internal consistency, with all values exceeding 0.7, meeting reliability standards. Convergent validity was confirmed as the average variance extracted (AVE) values were above 0.5. Discriminant validity was assessed using the Fornell-Larcker criterion and Heterotrait-monotrait (HTMT) ratios, showing that the square roots of the AVEs were greater than the inter-construct correlations (Fornell & Larcker, 1981), and all HTMT values were below the 0.90 threshold (Hair et al., 2016).

Table 1. Reflective measurement model results

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Constructs/Items	Factor loading	Cronbach's alpha	CR	AVE
Competence		0.814	0.876	0.64
COM1	0.755			
COM2	0.836			
COM3	0.811			
COM4	0.795			
Autonomy		0.881	0.913	0.676
AUT1	0.805			
AUT2	0.811			
AUT3	0.831			
AUT4	0.844			
AUT5	0.819			
Relatedness		0.845	0.896	0.682
REL1	0.831			
REL2	0.802			
REL3	0.833			
REL4	0.838			
Aesthetic appeal		0.844	0.905	0.76
AE1	0.857			
AE2	0.886			
AE3	0.871			

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Reward		0.856	0.903	0.699
REW1	0.853			
REW2	0.848			
REW3	0.835			
REW4	0.808			
Focused attention		0.833	0.89	0.67
FA1	0.727			
FA2	0.878			
FA3	0.787			
FA4	0.872			
Perceived usability		0.909	0.936	0.786
PU1	0.863			
PU2	0.925			
PU3	0.844			
PU4	0.911			
Continued use intention		1	1	1
CON	1			
WOM intention		0.749	0.888	0.799
WOM1	0.89			
WOM2	0.898			
App rating		1	1	1
RATE	1			

Table 2. Fornell-Larcker test.

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	COM	AUT	REL	AE	FA	PU	REW	CON	WOM	RATE
COM	0.8									
AUT	0.709	0.822								
REL	0.663	0.608	0.826							
AE	0.588	0.582	0.483	0.872						
FA	0.514	0.266	0.572	0.319	0.818					
PU	-0.161	0.079	-0.242	-0.045	-0.538	0.886				
REW	0.579	0.392	0.671	0.512	0.683	-0.35	0.836			
CON	0.509	0.648	0.456	0.575	0.236	0.156	0.329	1		
WOM	0.492	0.531	0.55	0.618	0.381	-0.126	0.546	0.609	0.894	
RATE	0.514	0.475	0.421	0.432	0.362	-0.074	0.457	0.481	0.38	1

Source: Authors' calculation

Table 3. Heterotrait-monotrait (HTMT) ratios.

	COM	AUT	REL	AE	FA	PU	REW	CON	WOM	RATE
COM										
AUT	0.855									
REL	0.793	0.705								
AE	0.714	0.676	0.573							
FA	0.601	0.302	0.676	0.365						
PU	0.176	0.131	0.268	0.13	0.621					
REW	0.675	0.445	0.786	0.588	0.805	0.396				
CON	0.577	0.693	0.501	0.631	0.256	0.164	0.352			
WOM	0.63	0.649	0.693	0.779	0.483	0.169	0.679	0.702		
RATE	0.572	0.509	0.459	0.459	0.392	0.077	0.493	0.481	0.44	

Source: Authors' calculation

The formative measurement model for the first-order dimensions was assessed next. Indicator reliability was evaluated using factor weights and loadings at a 5% significance level. According to Hair et al. (2016), indicators with non-significant weights but high loadings (>0.5) should still be retained. Table 5 shows that all indicators are statistically significant. Collinearity was checked using Variance Inflation Factor (VIF) values, which ranged from 1.714 to 2.37, well below the threshold of 5, indicating no collinearity concerns.

After assessing the first-order constructs, we created second-order constructs using the two-stage approach by Hair et al. (2018). The model was re-estimated to ensure indicator reliability and address collinearity. One indicator, "Challenges" in the Achievement-related construct, was removed because its VIF exceeded 5, signaling multicollinearity. After re-estimating, all remaining VIF values were under 5, confirming that multicollinearity was resolved in the revised model.

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Table 4. Formative measurement model results (first-order constructs).

		Weight	P Values	Loading	P Values	VIF
Scores	Frequency	0.428	0.005	0.911	0	2.37
	Importance	0.635	0	0.96	0	2.37
Graphs	Frequency	0.599	0	0.945	0	2.133
	Importance	0.476	0.001	0.912	0	2.133
Challenges	Frequency	0.568	0	0.913	0	1.714
	Importance	0.534	0	0.901	0	1.714
Badges	Frequency	0.65	0	0.945	0	1.815
	Importance	0.44	0	0.876	0	1.815
Rankings	Frequency	0.472	0.001	0.881	0	1.744
	Importance	0.625	0	0.934	0	1.744
Competition	Frequency	0.662	0	0.96	0	2.134
	Importance	0.409	0	0.891	0	2.134
Social Networking	Frequency	0.737	0	0.971	0	1.956
	Importance	0.335	0.004	0.85	0	1.956
Cooperation/Team	Frequency	0.639	0	0.941	0	1.793
	Importance	0.454	0	0.879	0	1.793
Virtual Identity	Frequency	0.555	0	0.942	0	2.343
	Importance	0.512	0	0.932	0	2.343
Narratives	Frequency	0.452	0	0.907	0	2.168
	Importance	0.62	0	0.952	0	2.168
Role-playing	Frequency	0.579	0	0.944	0	2.213
	Importance	0.492	0	0.921	0	2.213

Source: Authors' calculation

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Table 5. Formative measurement model results (second-order constructs).

		Weight	P Values	Loading	P Values	VIF
Achievement	Scores	0.417	0.008	0.919	0	3.37
	Graphs	0.447	0	0.889	0	2.183
	Badges	-0.192	0.277	0.767	0	4.017
	Rankings	0.433	0.012	0.848	0	3.79
	Competition	-0.008	0.956	0.795	0	3
Social	Social Networking	0.879	0	0.995	0	2.986
	Cooperation/Team	0.161	0.259	0.816	0	2.759
	Virtual Identity	0.489	0	0.921	0	2.24
Immersion	Narratives	0.284	0.093	0.883	0	2.785
	Role-playing	0.334	0.014	0.894	0	2.767
	Focus attention	0.317	0	0.617	0	2.316
Engagement	Perceived usability	0.234	0	-0.081	0.361	1.449
	Aesthetic appeal	0.633	0	0.892	0	1.395
	Reward	0.329	0	0.787	0	2.287

Source: Authors' calculation

5.3. Analysis of the structural model

The statistical significance of the standardized paths was assessed through a bootstrapping process with 398 cases and 1000 subsamples. This model explains 17.5% of competence need satisfaction variance, 11.9% of autonomy need satisfaction, 13.1% of relatedness need satisfaction, 57.8% of user engagement, 38.9% of continued use intention, 46.1% of WOM intention and 30.5% of app rating.

In support of H1b and H1c, interaction with achievement and progression-oriented game elements promotes the satisfaction of the needs autonomy ($\beta = 0.166$; p-value = 0.015) and relatedness ($\beta = 0.14$; p-value = 0.041). Contrary to our predictions, we did not find a significant relationship between interaction with achievement progression-oriented game elements and competence need satisfaction ($\beta = 0.005$; p-value = 0.935), which leads us to reject H1a.

Interaction with social-oriented game elements in the app is positively associated with competence ($\beta = 0.191$; p-value = 0.001) and relatedness ($\beta = 0.168$; p-value = 0.004) needs satisfaction, supporting H2a and H2c. The results indicated that interaction with social-oriented

elements in the app is negatively and insignificantly related to autonomy need satisfaction (β = 0.015; p-value = 0.845), rejecting H2b.

With regard to interaction with immersion-oriented game elements in the app, the results showed that it promotes competence (β = 0.251; p-value = 0.000) and autonomy (β = 0.19; p-value = 0.031) need satisfaction, supporting H3a and H3b; no significant effect was found on relatedness (β = 0.09; p-value = 0.241), rejecting H3c.

In addition, the results indicated that satisfaction of the needs for competence (β = 0.354; p-value = 0.000), autonomy (β = 0.116; p-value = 0.046) and relatedness (β = 0.295; p-value = 0.000) while using the gamified app promote user engagement. Hence, H4a, H4b and H4c are supported.

Finally, the findings demonstrated that user engagement with the gamified app promotes continued use intention (β = 0.523; p-value = 0.000) and WOM intention (β = 0.663; p-value = 0.000) and is positively associated with app rating (β = 0.46; p-value = 0.000). Therefore, H5, H6 and H7 are supported.

Table 6. Structural model results.

	β	P Values	Supported
Achievement -> Competence	0.005	0.935	No
Achievement -> Autonomy	0.166	0.015	Yes
Achievement -> Relatedness	0.14	0.041	Yes
Social -> Competence	0.191	0.001	Yes
Social -> Autonomy	0.015	0.845	No
Social -> Relatedness	0.168	0.004	Yes
Immersion -> Competence	0.251	0	Yes
Immersion -> Autonomy	0.19	0.031	Yes
Immersion -> Relatedness	0.09	0.241	No
Competence -> Engagement	0.354	0	Yes
Autonomy -> Engagement	0.116	0.046	Yes
Relatedness -> Engagement	0.295	0	Yes
Engagement -> App rating	0.46	0	Yes
Engagement -> Continued use intention	0.523	0	Yes
Engagement -> WOM intention	0.663	0	Yes

Control variables

Gender -> App rating	-0.006	0.87
Gender -> Continued use intention	-0.013	0.749
Gender -> WOM intention	0.05	0.169
Age -> App rating	0.06	0.221
Age -> Continued use intention	0.042	0.202
Age -> WOM intention	-0.126	0.001
Frequency -> App rating	0.069	0.209
Frequency -> Continued use intention	0.164	0
Frequency -> WOM intention	0.076	0.075

Source: Authors' calculation

Table 7. R square

	R Square	R Square Adjusted
Competence	0.175	0.169
Autonomy	0.119	0.112
Relatedness	0.131	0.124
Engagement	0.578	0.572
App rating	0.305	0.293
Continued use intention	0.389	0.378
WOM intention	0.461	0.452

Source: Authors' calculation

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6. Discussion

This study examined how gamification elements affect user engagement with digital banking apps, focusing on psychological needs from the Self-System Model of Motivational Development (SSMMD). The results show that achievement elements fulfill autonomy and relatedness needs but have limited impact on competence. This may be due to the extrinsic motivation these features create, which shifts focus from skill development to earning rewards, potentially reducing users' sense of competence (Lepper, Greene, & Nisbett, 1973). Contrary to expectations, immersion elements enhanced competence and autonomy, but did not promote relatedness.

According to Self-Determination Theory (Deci & Ryan, 1985), social elements, such as competition, enhance relatedness but may reduce autonomy as users feel pressured. Similarly, cooperation can limit freedom of choice. These findings align with Sailer et al. (2017), who also found that social elements improve relatedness but have little effect on autonomy. This study highlights the importance of fulfilling psychological needs to enhance user engagement, as seen in Xi & Hamari (2020) and Eisingerich et al. (2019), where gamification boosts brand engagement through psychological need satisfaction.

Finally, the study confirms that user engagement significantly influences key marketing outcomes. Engaged users are more likely to continue using the app, recommend it to others, and leave positive feedback, underscoring the value of gamification in fostering long-term engagement and brand loyalty.

7. Recommendations

Based on the study's findings, the authors propose several strategic recommendations for digital banking applications in Vietnam to optimize gamification for better Generation Z users engagement.

For banks that have already integrated gamification, it is important to balance extrinsic and intrinsic motivation. Focusing on reward points, leaderboards, and challenges can enhance user engagement, but personalization and immersion (e.g., avatars, progress tracking) are essential for long-term retention (Xi & Hamari, 2019; Bitrián et al., 2021). Adding peer challenges and collaborative goals can foster social interaction without pressuring users (Eisingerich et al., 2019). Real-time feedback and adaptive learning can guide responsible financial behavior, while seasonal challenges and dynamic rewards will sustain interest (Koivisto & Hamari, 2019).

For banks that have not yet adopted gamification strategies, they should begin by integrating basic elements like points and milestone rewards to drive engagement (Hamari & Koivisto, 2015). Focusing on areas like savings and budgeting will increase effectiveness. Compliance with regulations ensures ethical practices and avoids risky behaviors (Hwang & Choi, 2020). Banks should use data-driven insights to personalize experiences and maintain user engagement (Mulcahy et al., 2020).

By following these steps, both established and new digital banks can enhance engagement and long-term success in a competitive market.

8. Conclusion and Limitations

This study provides insights into how gamification impacts Generation Z's engagement with digital banking apps. The findings show that gamification elements that address psychological needs - competence, autonomy, and relatedness - significantly enhance engagement. Achievement elements affect relatedness, social elements boost competence and relatedness, and immersion elements improve competence and autonomy. Increased engagement leads to higher usage intention, word-of-mouth recommendations, and better app ratings.

However, the study has limitations. The sample, consisting mainly of Generation Z users in Vietnam, limits the generalizability. The use of self-reported data may introduce biases, and the cross-sectional design prevents tracking long-term engagement. Future research should adopt longitudinal methods and include qualitative interviews.

In conclusion, gamification can improve Generation Z's engagement with digital banking apps. By fulfilling psychological needs, banks can enhance the user experience and build long-term customer loyalty in a competitive market.

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