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## Gamification Strategies and Customer Churn Reduction in Entrepreneurial Retail Firms: An Empirical Study of Millennials

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### Abstract

This study investigates the impact of gamification strategies on customer churn reduction in entrepreneurial retail firms, focusing on Millennial consumers in Malaysia's Klang Valley. Customer churn threatens profitability, particularly for emerging enterprises, and gamification has emerged as a potential tool to enhance customer engagement and retention. Drawing on the Self-Determination Theory, the study examines three gamified marketing interventions: membership programmes, contest rewards, and personalised discounts as direct predictors of churn reduction. A quantitative, cross-sectional research design was employed, using a structured questionnaire distributed to 180 Millennial consumers through purposive sampling. The data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) via SmartPLS 4.0. Results indicate that all three gamification strategies significantly reduce customer churn, with contest rewards exerting the strongest influence, followed by personalised discounts and membership programmes. The model demonstrated moderate explanatory power and satisfactory predictive validity based on PLS Predict analysis. The originality of this research lies in its focus on customer churn as a direct behavioural outcome of gamification, rather than the more commonly explored mediators such as loyalty or engagement. Additionally, the study contributes to the evolving application of PLS-SEM

by incorporating both explanatory and predictive assessments. The findings offer theoretical advancement and practical guidance for entrepreneurial retailers aiming to enhance retention through gamification-driven strategies tailored to the preferences and behaviours of Millennial consumers.

**Keywords:** Gamification, Customer Churn, Millennials, Membership Programmes, Contest Rewards, Personalised Discounts, Retail Marketing

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## 1.0 Introduction

Entrepreneurial retail firms operate in an increasingly saturated and competitive environment where retaining existing customers is vital for sustainability and growth. Among the most elusive consumer segments are Millennials – those born between 1981 and 1996 (Dimock, 2019) who tend to exhibit lower brand loyalty, higher price sensitivity, and frequent switching behaviour compared to previous generations (Cheung et al., 2020; Djafarova & Bowes, 2021). This generation often seeks value-driven experiences beyond transactional relationships, presenting a unique challenge for firms seeking to cultivate long-term customer relationships. As a result, customer churn, defined as the rate at which customers discontinue purchasing from a business, has emerged as a critical issue that threatens profitability, especially for smaller or emerging enterprises (Shobana et al., 2023).

To address this issue, gamification has gained prominence as a marketing tool that incorporates game elements such as levels, rewards, or competition into non-game contexts to enhance user engagement and motivate behaviour (Koivisto & Hamari, 2019). While large corporations have increasingly integrated gamified strategies into loyalty programmes and customer journeys, there is a growing interest in how entrepreneurial firms can adopt similar tactics to combat churn. Specifically, gamification components such as membership programmes, contest rewards, and personalised discounts are believed to contribute significantly to customer retention by appealing to intrinsic motivations like achievement, recognition, and personal value (Bravo et al., 2023; Goldberg, 2024; Hasnat, 2020; Lim et al., 2025).

Despite their potential, the direct effects of these gamification elements on customer churn have not been extensively investigated especially in emerging markets like Malaysia, where entrepreneurial retail firms operate under resource constraints and cultural factors may shape consumer responses differently. Klang Valley, a highly urbanised region in Malaysia, serves as a critical testbed due to its dense Millennial population and dynamic retail landscape (Amartuvshin et al, 2021). However, most studies have either addressed gamification's indirect influence through loyalty or brand perception (Koivisto & Hamari, 2019; Lim et al., 2025) or focused on digital platforms

and multinational firms. There is limited empirical evidence isolating the direct impact of membership-based, reward-driven, and discount-oriented gamification strategies on churn behaviour in entrepreneurial retail settings.

This study seeks to fill this research gap by examining how three gamification strategies, membership programmes, contest rewards, and personalised discounts, affect customer churn reduction among Millennials in Klang Valley. Framed within the Self-Determination Theory (SDT), this research investigates how gamified stimuli can influence customer decisions to remain with or leave a brand. The findings are expected to offer actionable insights for entrepreneurial firms seeking cost-effective, behaviourally informed approaches to retaining Millennial customers.

## **1.1 Problem Statement**

Customer churn presents an enduring challenge for entrepreneurial retail firms in highly competitive markets. The cost of acquiring new customers is significantly higher than retaining existing ones, making customer retention a critical determinant of long-term profitability (Shahroodi et al., 2024; Sikri et al., 2024). Among Millennials – consumers born between 1981 and 1996, churn rates are particularly pronounced. This segment tends to exhibit limited brand loyalty, a strong desire for personalised value, and low switching costs, which render traditional retention tactics less effective (Brown, 2025 & Vieira et al., 2024).

Gamification has been introduced as a marketing innovation to foster customer engagement and loyalty through game-like mechanics such as rewards, competition, and status recognition (Koivisto & Hamari, 2019). While studies have shown that gamification can improve customer interaction, the direct impact of specific gamification strategies, namely membership programmes, contest rewards, and personalised discounts on customer churn reduction, remains underexplored, especially within entrepreneurial retail settings. Most empirical studies either focus on large corporations or examine indirect outcomes such as loyalty and satisfaction, without evaluating the causal

relationship between gamified strategies and churn behaviour in isolation (Castaldo, 2024; Kirgiz et al., 2024).

This knowledge gap is particularly pressing in Malaysia's Klang Valley, a densely populated urban region with a significant Millennial population and a vibrant entrepreneurial retail scene (Amartuvshin et al., 2021). While many retail firms in this region have adopted gamified tools, they often do so without empirical guidance regarding which elements are most effective in reducing customer attrition. For resource-constrained entrepreneurs, understanding the direct influence of specific gamification strategies is essential to ensure efficient allocation of marketing efforts and maximise customer lifetime value. This study addresses these gaps by empirically investigating how membership programmes, contest rewards, and personalised discounts influence customer churn reduction among Millennials in Klang Valley. The findings are expected to inform evidence-based decision-making for entrepreneurs seeking to retain high-value customers through strategic gamification.

## **1.2 Research Objectives**

The overarching objective of this study is to examine the role of gamification strategies in reducing customer churn among Millennials in Klang Valley's entrepreneurial retail sector. The specific objectives are:

1. To examine the influence of membership programmes on customer churn reduction among Millennials in entrepreneurial retail firms.
2. To assess the influence of contest rewards on customer churn reduction among Millennials in entrepreneurial retail firms.
3. To evaluate the influence of personalised discounts on customer churn reduction among Millennials in entrepreneurial retail firms.

### **1.3 Research Questions**

In alignment with the stated objectives, this study seeks to answer the following research questions:

1. To what extent do membership programmes reduce customer churn among Millennials in entrepreneurial retail firms?
2. To what extent do contest rewards reduce customer churn among Millennials in entrepreneurial retail firms?
3. To what extent do personalised discounts reduce customer churn among Millennials in entrepreneurial retail firms?

## **2.0 Literature Review and Hypotheses Development**

This section discusses the theoretical grounding and recent literature relevant to the study's conceptual model, focusing on three gamification strategies – membership programmes, contest rewards, and personalised discounts; and their direct effects on customer churn reduction among Millennials in Klang Valley's entrepreneurial retail firms. While gamification has demonstrated effectiveness in enhancing engagement and retention across various sectors, its efficacy is not universally consistent. Some scholars caution that overreliance on extrinsic rewards may undermine intrinsic motivation over time, especially if game elements lack personal relevance or novelty (Leclercq et al., 2020; Schaarschmidt & Dose, 2023). Moreover, poorly designed gamification can lead to user fatigue, disengagement, or perceptions of manipulation, thereby diminishing its long-term effectiveness (Koivisto & Hamari, 2019). Thus, while the selected strategies hold promise, a critical stance is warranted to account for situational, generational, and cultural contingencies that may moderate their outcomes.

### **2.1 Underpinning Theories – Self-Determination Theory (SDT)**

Self-Determination Theory (Deci & Ryan, 2000) posits that individuals are most motivated when three basic psychological needs are satisfied: autonomy, competence,

and relatedness. Gamification strategies are most effective when they are designed to fulfil these needs. For instance, personalised discounts enhance autonomy, membership programmes foster competence through tier progression, and contest rewards tap into social comparison and relatedness. When these intrinsic motivations are stimulated, customers exhibit higher engagement and reduced defection tendencies (Chong et al., 2025; Elhadidy et al., 2024; Koivisto & Hamari, 2019; Savard & Telahigue, 2025).

## **2.2 Customer Churn**

Customer churn, defined as the rate at which consumers discontinue their relationship with a brand, poses a significant threat to entrepreneurial retail firms, especially when targeting Millennials who are highly responsive to value-driven experiences and quick to switch brands (Jahan & Sanam, 2024; Tadepally et al., 2024). Gamification has emerged as a behavioural marketing strategy to address this issue. By embedding game-like features into customer experiences, firms aim to stimulate engagement and reduce attrition.

## **2.3 Membership Programmes**

Membership programmes offer structured incentives such as tiered rewards, points accumulation, and status recognition to encourage customer retention. They increase the perceived value of long-term engagement and create psychological switching barriers (de Boer & Chin, 2025). Membership tiers often satisfy the need for competence and autonomy, thus encouraging continued participation (Khodakarami et al., 2024). Prior research confirms that members of loyalty programmes tend to remain with the brand longer and exhibit a lower propensity to churn (Goldberg, 2024).

## **2.4 Contest Rewards**

Contest rewards refer to gamified marketing mechanisms that stimulate competition and excitement, such as leaderboards, prize drawings, or referral challenges. These tools appeal to the psychological need for achievement and relatedness, motivating users through fun, challenge, and recognition (Alfattah Al Attar, 2024; Razak, 2024). Millennials respond well to competitive and participatory formats that create social prestige or measurable progress (Butler, 2024; Krishna & Agrawal, 2024). Entrepreneurial firms benefit from the viral effect of contests, which also enhances brand engagement while encouraging retention.

## **2.5 Personalised Discounts**

Personalised discounts deliver tailored financial incentives based on individual preferences, behaviour, or purchase history. These interventions foster autonomy and reciprocity, making customers feel acknowledged and valued (Lipman, 2024). Studies have found that such discounting methods enhance perceived fairness and customer-brand connection, thus lowering the likelihood of churn (Chong et al., 2025; Jahan & Sanam, 2024; Tadeppally et al., 2024). Millennials prefer brands that anticipate their needs and provide timely, relevant offers.

## **2.6 Hypotheses Development**

### **2.6.1 Membership Programmes and Customer Churn Reduction**

Membership programmes are gamification tools designed to offer exclusive rewards, status recognition, and value accumulation, typically in exchange for continued patronage. From the SDT perspective, they fulfil consumers' psychological needs for autonomy (choice in reward redemption) and competence (progression through tiers), leading to enhanced motivation and engagement (Chong et al., 2025; Deci & Ryan, 2000). Previous studies suggest that effective membership programmes can reduce churn by creating psychological switching costs and encouraging repeat visits (Brown, 2025,

& Vieira et al., 2024). For entrepreneurial retailers, such programmes are cost-efficient tools to foster perceived exclusivity and brand affiliation among Millennial customers, who value personalised and participatory brand interactions (Koivisto & Hamari, 2019). However, the empirical evidence on the direct impact of membership on churn remains limited, as many studies focus on intermediary outcomes like loyalty or satisfaction. Hence, the following hypothesis is posited:

H1: Membership programmes have a significant positive effect on customer churn reduction among Millennials in entrepreneurial retail firms.

### **2.6.2 Contest Rewards and Customer Churn Reduction**

Contest rewards introduce competitive and interactive components into customer experiences, such as sweepstakes, leaderboards, or referral challenges. These mechanisms appeal to the SDT-driven need for competence and relatedness, as customers are motivated by achievement and social comparison (Deci & Ryan, 2000; Schaarschmidt & Dose, 2023). Research shows that contest rewards generate emotional excitement and enhance perceived brand interaction, which can reduce the likelihood of defection (Berger et al., 2018; Leclercq et al., 2020; Schaarschmidt & Dose, 2023). For Millennials, who often value experiences over ownership participation, such gamified activities enhance engagement and deepen emotional investment (Brown, 2025; Vieira et al., 2024). In entrepreneurial retail contexts, where marketing budgets are constrained, contests offer a low-cost yet high-impact method to keep customers engaged and reduce churn. Hence, the following hypothesis is posited:

H2: Contest rewards have a significant positive effect on customer churn reduction among Millennials in entrepreneurial retail firms.

### **2.6.3 Personalised Discounts and Customer Churn Reduction**

Personalised discounts involve tailoring offers to individual purchasing behaviour, preferences, or loyalty status. These interventions satisfy the SDT needs for autonomy and relatedness, as customers feel recognised and valued by the brand (Deci & Ryan, 2000; Lipman, 2024). Empirical research highlights that targeted discounts enhance the perception of fairness and reciprocity in brand-consumer relationships, both of which are crucial in reducing switching behaviour (Bravo et al., 2023; Lim et al., 2025). Millennials expect brands to understand and anticipate their needs; generic promotions are often ignored, while personalised discounts are seen as signals of relational commitment (Rachbini et al., 2024). Hence, the following hypothesis is posited:

H3: Personalised discounts have a significant positive effect on customer churn reduction among Millennials in entrepreneurial retail firms.

## **3.0 Methodology**

This study adopts a quantitative, cross-sectional research design to examine the direct effects of three gamification strategies – membership programmes, contest rewards, and personalised discounts on customer churn reduction (Creswell & Creswell, 2018). The research is grounded in the Self-Determination Theory (SDT) framework, applying a theory-testing approach to evaluate behavioural outcomes among Millennial consumers in entrepreneurial retail settings.

### **3.1 Research Design**

A deductive, hypothesis-driven approach was employed using structured survey instruments to test the theoretical relationships (Hair et al., 2022). The study used a non-experimental, correlational design to measure the strength and significance of direct effects between the independent and dependent variables. Given the focus on behavioural perceptions, a self-administered questionnaire was deemed suitable to capture attitudinal

and intention-based responses (Hair et al., 2022). The constructs were measured using previously validated items adapted to the retail context.

### 3.2 Population and Sampling

The target population for this study comprised Millennials aged 29 to 44 in the year 2025 (born 1981 – 1996) residing in Klang Valley, Malaysia, who actively purchase from entrepreneurial retail firms (Dimock, 2019). Klang Valley was chosen due to its high concentration of retail outlets and Millennial consumers, representing a demographically and economically dynamic region (Amartuvshin et al., 2021). A non-probability purposive sampling technique was used to ensure respondents fit the profile of tech-savvy, consumption-oriented Millennials familiar with retail loyalty and promotional schemes (Hair et al., 2022). To determine an adequate sample size, G\*Power 3.1.9.7 was used to conduct a power analysis for a multiple regression model with three predictors, medium effect size ( $f^2 = 0.15$ ),  $\alpha = 0.05$ , and power = 0.80 (Hair et al., 2022). The minimum required sample was 77, but 180 valid responses were collected to enhance statistical reliability.

### 3.3 Instrumentation and Measures

A structured questionnaire was developed based on prior validated scales and refined for contextual relevance. Each construct was measured using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). The instrument underwent expert review and a pilot test with 30 respondents to assess clarity and reliability.

**Membership Programmes:** Adapted from loyalty and status-tier programme items (Aldás-Manzano et al., 2009), assessing exclusivity, progression, and reward appeal.

**Contest Rewards:** Items focused on perceived excitement, fairness, and engagement, adapted from gamification literature (Aldás-Manzano et al., 2009).

**Personalised Discounts:** Measured using adapted scales on offer relevance, satisfaction, and behavioural influence (Aldás-Manzano et al., 2009).

**Customer Churn Reduction:** Operationalised through intention to stay, reduced switching likelihood, and satisfaction continuity (Hamari, 2013).

Each construct included 3 – 5 items, and to ensure the reliability of the constructs, this study adopted McDonald's Omega ( $\omega$ ) as the primary reliability indicator. Omega is a more robust alternative to Cronbach's Alpha, particularly for multidimensional scales and non-tau-equivalent items (Dunn et al., 2014; Hair et al., 2022). All constructs achieved omega coefficients exceeding 0.70 in Table 1, indicating strong internal consistency during pretesting.

**Table 1: Reliability Analysis**

<b>Variables</b>	<b>McDonald's Omega</b>
Membership Programmes	0.716
Personalised Discount	0.784
Contest Rewards	0.880
Customer Churn Reduction	0.738

### **3.4 Data Collection Procedure**

Data were collected through both online (Google Forms) and offline (retail locations in shopping malls and urban districts) to ensure a diverse and representative sample. Screening questions were included to confirm respondents' Millennial age bracket and regular patronage of entrepreneurial retail outlets. Participation was voluntary, and all respondents were informed of their rights, anonymity, and data confidentiality. Before data collection, the study received ethical clearance from Asia e University's Research Ethics Committee. Informed consent was obtained digitally and in writing.

### 3.5 Data Analysis Technique

The collected data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) via SmartPLS 4.0 software (Ringle et al., 2022). PLS-SEM was selected due to its suitability for small to medium sample sizes, ability to handle non-normal data, and strong predictive relevance for exploratory behavioural studies (Hair et al., 2022; Ramayah et al., 2018). The analysis proceeded in two stages:

**Stage 1: Measurement model assessment:** Reliability (Cronbach's  $\alpha$ , composite reliability), convergent validity (average variance extracted, AVE), and discriminant validity (HTMT ratio) (Hair et al., 2022; Ramayah et al., 2018).

**Stage 2: Structural model assessment:** Path coefficients, significance testing via bootstrapping (10,000 samples),  $R^2$  values, and effect size ( $f^2$ ) were evaluated to test the proposed hypotheses (Hair et al., 2022; Ramayah et al., 2018).

## 4.0 Results and Discussion

### 4.1 Demographic Analysis

**Table 2: Demographic Profile**

<b>Demographic</b>	<b>Frequencies</b>	<b>Percentage (%)</b>
<b>Gender</b>		
Male	83	46.1
Female	97	53.9
<b>Race</b>		
Malay	95	52.8
Chinese	72	40.0
Indian	9	5.0
Others	4	2.2
<b>Age</b>		
29 - 34	70	38.9
35 - 39	55	30.6
40 - 44	55	30.6

<b>Demographic</b>	<b>Frequencies</b>	<b>Percentage (%)</b>
<b>Marital Status</b>		
Single	86	47.8
Married	91	50.6
Divorces	3	1.7
<b>Education Level</b>		
Secondary	4	2.2
Diploma	18	10.0
Bachelor's Degree	91	50.6
Master's Degree	54	30.0
Doctoral Degree	13	7.2
<b>Employment Status</b>		
Government Sector	25	13.9
Private Sector	126	70.0
Self-Employed	23	12.8
Unemployment	3	1.7
Retired	1	0.6
Housewife	2	1.1
<b>Monthly Personal Income</b>		
RM 2,000 or less	9	5.0
RM 2,001 to RM 4,000	34	18.9
RM 4,001 to RM 6,000	55	30.6
RM 6,001 to RM 8,000	32	17.8
RM 8,001 to RM 10,000	22	12.2
RM 10,001 and above	22	12.2
No Income	6	3.3

The demographic distribution based on Table 2 of the 180 respondents revealed a relatively balanced gender composition, with 53.9% female and 46.1% male participants. In terms of ethnicity, the majority were Malay (52.8%), followed by Chinese (40.0%), Indian (5.0%), and Others (2.2%), reflecting the multicultural composition of Klang Valley. Regarding age, the participants were evenly spread across three brackets: 38.9% were aged 29 – 34, and both the 35 – 39 and 40 – 44 age groups accounted for 30.6% each. The marital status data showed that 50.6% were married, 47.8% were single, and 1.7% were divorced, suggesting a relatively mature and stable respondent base.

In terms of educational attainment, more than half of the respondents held a bachelor's degree (50.6%), followed by 30.0% with master's degrees, 10.0% with Diplomas, and 7.2% with Doctoral degrees, indicating a highly educated sample. Employment status showed a concentration in the private sector (70.0%), with others working in the government sector (13.9%), self-employed (12.8%), or identifying as unemployed (1.7%), retired (0.6%), or housewife (1.1%). In terms of monthly personal income, the largest group earned between RM 4,001 and RM 6,000 (30.6%), followed by RM 2,001 – RM 4,000 (18.9%), RM 6,001 – RM 8,000 (17.8%), and RM 8,001 – RM 10,000 (12.2%). An additional 12.2% earned RM 10,001 and above, while 5.0% earned RM 2,000 or less, and 3.3% reported no income. These demographic characteristics suggest that the respondents are predominantly educated, economically active Millennials, making them a suitable cohort for examining the effects of gamification on customer churn behaviour in the Klang Valley entrepreneurial retail context.

#### **4.2 Measurement Mode Assessment**

The reflective measurement model was assessed through indicator reliability and convergent validity, focusing specifically on the outer loadings, Average Variance Extracted (AVE), and HTMT. The analysis was conducted following guidelines from Hair et al. (2022) and Ramayah et al. (2018), with results indicating that all constructs meet the required psychometric benchmarks.

First, the indicator reliability was assessed by examining the outer loadings of each item with respect to its designated construct. As illustrated in the PLS-SEM model output in Table 3, all items from the reflective constructs - Membership Programmes, Personalised Discount, Contest Rewards, and Customer Churn Reduction exceeded the minimum acceptable threshold of 0.50, with all loadings statistically significant at  $p < 0.05$ . For the Membership Programmes construct, the item loadings ranged from 0.595 to 0.859, indicating satisfactory item contribution to the latent construct. Similarly, the Personalised Discount construct demonstrated loadings between 0.631 and 0.889, reflecting an acceptable range of reliability for each indicator. The Contest Rewards construct showed consistent reliability, with item loadings varying from 0.718 to 0.909.

Finally, the Customer Churn Reduction construct exhibited strong indicator reliability, with all five items loading between 0.732 and 0.916. These results confirm that the indicators for each construct adequately reflect their respective latent variables and meet the required criteria for inclusion in the measurement model.

Furthermore, convergent validity was evaluated through the Average Variance Extracted (AVE), which indicates the extent to which the indicators collectively measure the underlying construct. According to the threshold proposed by Fornell and Larcker (1981), an AVE value of 0.50 or greater is considered adequate, as it suggests that the construct explains more than half of the variance observed in its indicators. In this study, all reflective constructs met this criterion. Specifically, the AVE for Membership Programmes was 0.559, Personalised Discount was 0.608, Contest Rewards was 0.677, and Customer Churn Reduction was 0.754. These values confirm that each construct in the measurement model demonstrates sufficient convergent validity, thus supporting the assumption that the indicators reliably converge on their respective latent constructs.

**Table 3: Analysing The Validity and Reliability of the Reflective Models**

Constructs	Items	Indicator Reliability	Convergent Validity	Internal Consistency Reliability	
		Outer Loadings	AVE	Composite Reliability	Cronbach's Alpha
		$\geq 0.50$	$\geq 0.50$	$\geq 0.7$	$> 0.7$
Contest Rewards	CR1	0.909	0.677	0.893	0.845
	CR2	0.891			
	CR3	0.758			
	CR4	0.718			
Personalised Discount	D1	0.822	0.608	0.859	0.785
	D2	0.889			
	D3	0.631			
	D4	0.753			
Membership Programmes	M1	0.837	0.559	0.832	0.73
	M2	0.859			
	M3	0.595			

	M4	0.668			
Customer Churn Reduction	CC1	0.916	0.754	0.938	0.916
	CC2	0.916			
	CC3	0.907			
	CC4	0.858			
	CC5	0.732			

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Next, discriminant validity was evaluated using the Heterotrait-Monotrait Ratio of Correlations (HTMT), which is considered a more robust criterion compared to the traditional Fornell-Larcker method. According to Henseler et al. (2015), HTMT values below 0.90 indicate that discriminant validity has been established between constructs. In this study, the HTMT analysis focused on the reflective constructs used in the model, namely Membership Programmes, Personalised Discount, Contest Rewards, and Customer Churn Reduction. As shown in the output in Table 4, all HTMT values fell below the recommended threshold. Specifically, the HTMT value between Contest Rewards and Customer Churn Reduction was 0.584; between Membership Programmes and Customer Churn Reduction, it was 0.636; and between Personalised Discount and Customer Churn Reduction, it was 0.604. Additionally, the HTMT values between Membership Programmes and Contest Rewards and between Personalised Discount and the other independent variables ranged from 0.781 to 0.873. Since all values are well below 0.90, the model satisfies the HTMT criterion for discriminant validity.

Based on the results, it can be concluded that the constructs used in this model meet the required level of discriminant validity, ensuring that each construct is empirically distinct from the others.

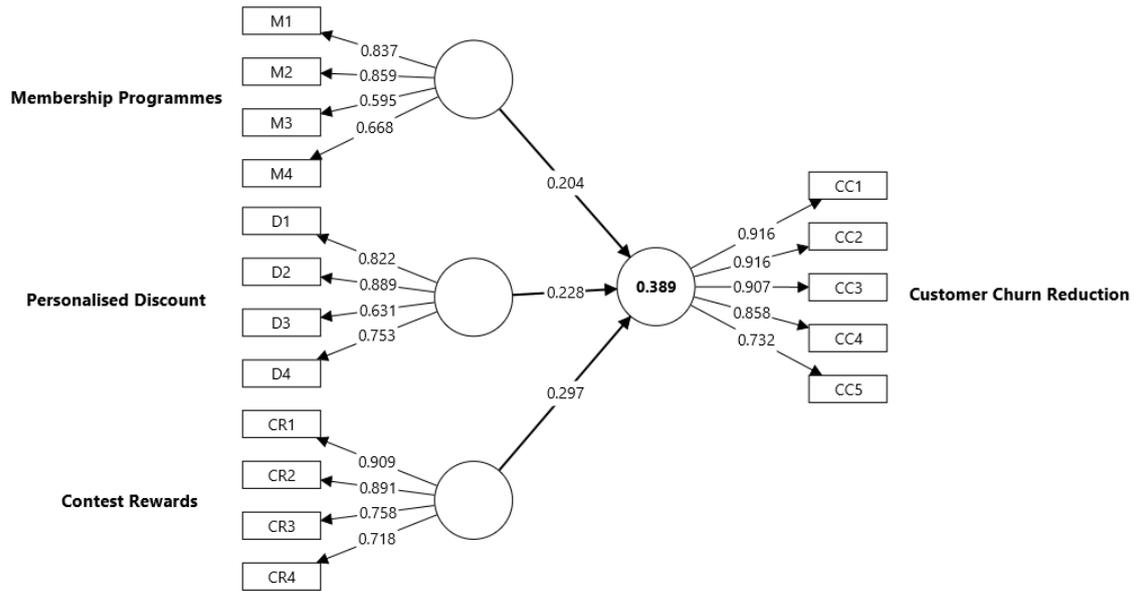


Figure 1: PLS Algorithm Model

Table 4: Heterotrait-monotrait ratio (HTMT) Matrix

Construct	1	2	3	4
1. Contest Rewards				
2. Customer Churn Reduction	0.584			
3. Membership Programmes	0.781	0.636		
4. Personalised Discount	0.708	0.604	0.873	

### 4.3 Structural Model Assessment

The structural model was assessed through several key criteria, including path coefficients, statistical significance, confidence intervals, coefficient of determination ( $R^2$ ), and effect sizes ( $f^2$ ), following the recommendations of Hair et al. (2022). In line with the critique by Hahn and Ang (2017), reliance solely on p-values is insufficient to determine the practical significance of hypothesised relationships. Therefore, this study reports the bootstrapped confidence intervals, effect sizes, variance inflation factors (VIF), and standard significance statistics.

### 4.3.1 Hypothesis Testing (Direct Effects)

The structural model aimed to examine the direct influence of three gamification strategies Membership Programmes, Contest Rewards, and Personalised Discounts, on the outcome variable, Customer Churn Reduction. The results of the hypothesis testing are summarised in Table 5 and discussed as follows. The relationship between Membership Programmes and Customer Churn Reduction yielded a standardized path coefficient ( $\beta$ ) of 0.204, with a  $t$ -value of 2.148 and a corresponding  $p$ -value of 0.016. The 95% bias-corrected confidence interval ranged from 0.047 to 0.359, excluding zero, indicating a statistically significant positive relationship. Although the effect size was small ( $f^2 = 0.034$ ), the results support H1, suggesting that membership-based reward systems moderately reduce customer churn among Millennials in entrepreneurial retail contexts.

The relationship between Contest Rewards and Customer Churn Reduction was stronger, with a standardized path coefficient ( $\beta$ ) of 0.297,  $t$ -value of 3.094, and a  $p$ -value of 0.001. The 95% confidence interval [0.143, 0.457] did not include zero, affirming statistical significance. The associated effect size ( $f^2 = 0.088$ ) was still considered small based on Cohen's (1988) guidelines, yet comparatively stronger than the effect of membership programmes. These findings provide empirical support for H2, confirming that gamified contest mechanisms effectively retain Millennial customers. Similarly, the effect of Personalised Discounts on Customer Churn Reduction was statistically significant, with a path coefficient ( $\beta$ ) of 0.228,  $t$ -value of 2.279, and  $p$ -value of 0.011. The bootstrapped confidence interval [0.065, 0.394] excluded zero, and the calculated effect size was small ( $f^2 = 0.045$ ). These results support H3, indicating that tailored discount strategies are meaningful in influencing customer retention behaviour.

### 4.3.2 Collinearity and Multicollinearity Assessment

All predictor constructs demonstrated variance inflation factor (VIF) values below the conservative threshold of 3.3, as recommended by Hair et al. (2022). Specifically, VIF

values ranged from 1.639 to 2.024, confirming the absence of multicollinearity and ensuring that the path coefficients are not distorted by redundancy among the predictors.

#### **4.3.3 Coefficient of Determination ( $R^2$ )**

The  $R^2$  value for the dependent variable, Customer Churn Reduction, was 0.389. This suggests that the three gamification strategies collectively explain 38.9% of the variance in churn behaviour among Millennial consumers in the sample. Based on the guidelines by Cohen (1988), this level of  $R^2$  represents a moderate explanatory power, confirming the overall relevance of the model for understanding churn dynamics in entrepreneurial retail firms.

#### **4.3.4 Conclusion of Structural Model Analysis**

In summary, the results of the PLS-SEM structural model analysis provide strong support for the hypothesised relationships between the three gamification strategies and customer churn reduction. All direct paths were statistically significant at the 5% level, and the corresponding confidence intervals did not include zero, further validating the robustness of the findings. Although the effect sizes were small in all three cases, this is consistent with behavioral interventions' incremental and complementary nature in marketing strategies. The  $R^2$  value of 0.389 suggests that the model has moderate explanatory power, as the three predictors collectively account for 38.9% of the variance in customer churn reduction among Millennial consumers.

However, it is important to note that while  $R^2$  indicates explanatory strength, contemporary best practices in Partial Least Squares Structural Equation Modeling (PLS-SEM) recommend complementing  $R^2$  with an assessment of predictive validity. Following the guidelines of Shmueli et al. (2019), this study also conducted a PLS Predict analysis to evaluate the model's out-of-sample predictive power. The inclusion of predictive assessment is essential for gauging how well the model performs in unseen data contexts, thus enhancing its generalisability and practical utility. While the  $R^2$  value

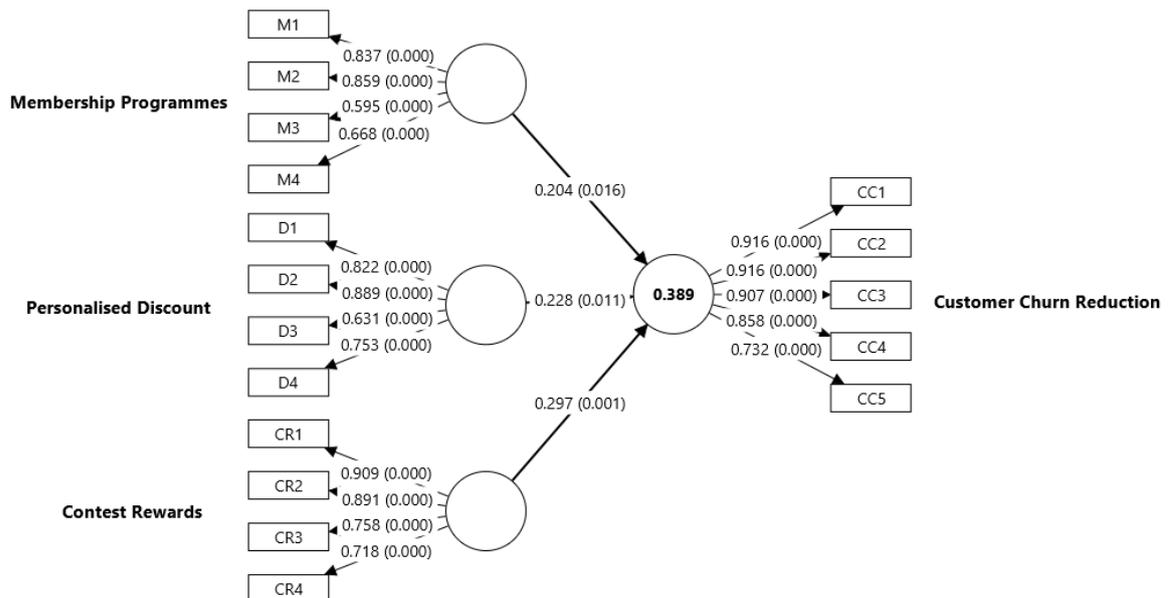
provides evidence of a meaningful proportion of explained variance, the additional evidence from predictive validity testing strengthens the overall case for model robustness.

In line with the evolving methodological standards in PLS-SEM research (Hair et al., 2022; Shmueli et al., 2019), it is recommended that future studies adopt a dual focus on both explanatory power ( $R^2$ ) and predictive performance (RMSE-based metrics from PLS Predict) to assess model quality comprehensively. This approach ensures that models are not only theoretically sound but also applicable in real-world decision-making environments.

**Table 5: Hypothesis Testing**

Hypothesis	Std Beta	Std Error	t-values	p-values	BCI LL	BCI UL	f <sup>2</sup>	VIF	Effect Size	Results
H1	0.204	0.095	2.148	0.016	0.047	0.359	0.034	2.024	Small	Support
H2	0.297	0.096	3.094	0.001	0.143	0.457	0.088	1.639	Small	Support
H3	0.228	0.100	2.279	0.011	0.065	0.394	0.045	1.904	Small	Support

**Note:** 95% confidence interval with a bootstrapping of 10,000



**Figure 2: Research Model**

#### 4.4 PLS Predict Assessment

Further, Shmueli et al. (2019) proposed PLSpredict, a holdout sample-based procedure that generates case-level predictions on an item or a construct level using the PLS-Predict with a 5-fold procedure to check for predictive relevance. Shmueli et al. (2019) suggested that if all the item differences (PLS-LM) are lower than, there is strong predictive power; if all are higher than, predictive relevance is not confirmed, while if the majority are lower than, there is moderate predictive power, and if a minority are then there is low predictive power. Based on Table 6, all the errors of the PLS model were lower than the LM model for CC1 to CC5; thus, we can conclude that our model has a strong predictive power. Also, the positive  $Q^2$  Predict values for the dependent measurement model (Table 7) and the almost zero means of PLS-SEM prediction error values (Customer Churn Reduction:  $Q^2$  Predict = 0.319), indicate that the final model possesses sufficient predictive power.

**Table 6: PLS Predict**

Items for DV	$Q^2$ predict	PLS-SEM_RMSE	LM_RMSE	PLS-LM_RMSe
CC1	0.213	1.193	1.222	-0.029
CC2	0.273	1.178	1.209	-0.031
CC3	0.209	1.197	1.229	-0.032
CC4	0.222	1.244	1.280	-0.036
CC5	0.256	1.173	1.188	-0.015

**Note:** CC = Customer Churn Reduction

**Table 7: Predictive Power of Final Model**

	$Q^2$ predict	RMSE	MAE
Customer Churn Reduction	0.319	0.836	0.634

#### 5.0 Discussion

The findings of this study provide empirical support for the proposition that gamification strategies; namely membership programmes, contest rewards, and personalised

discounts, can significantly reduce customer churn among Millennial consumers in entrepreneurial retail firms. The structural model revealed that all three independent variables had a statistically significant and positive effect on customer churn reduction, with contest rewards showing the strongest path coefficient ( $\beta = 0.297$ ), followed by personalised discounts ( $\beta = 0.228$ ) and membership programmes ( $\beta = 0.204$ ). This confirms that gamified marketing tools are relevant and impactful in shaping customer retention behaviours, particularly among digitally engaged and value-driven Millennial shoppers.

The sample's demographic composition, comprised predominantly of degree-educated, economically active Millennials working in the private sector, aligns with previous research identifying this segment as tech-savvy and inclined towards experiential consumption (Cheung et al., 2020). The effectiveness of contest rewards may reflect Millennials' preference for social competition, achievement, and interactive brand engagement (Bravo et al., 2023; Schaarschmidt & Dose, 2023). Personalised discounts also resonated with this cohort, reinforcing the importance of tailored experiences and financial incentives in enhancing the perception of value (Lipman, 2024). While membership programmes demonstrated a weaker effect, they still contributed meaningfully to reducing churn, suggesting that structured loyalty schemes that offer tiered rewards and progression are effective when designed to support users' sense of competence and autonomy (Koivisto & Hamari, 2019).

Importantly, the predictive validity established through PLS-Predict enhances confidence in the model's applicability to real-world settings, suggesting not only explanatory relevance but also practical forecasting utility. This dual strength reflects an evolution in PLS-SEM standards, where models are evaluated based on their ability to predict future observations, not just explain existing variance (Hair et al., 2022; Shmueli et al., 2019). While the  $R^2$  value of 0.389 indicates moderate explanatory power, the strong predictive results ( $Q^2$  Predict = 0.319) affirm the model's robustness in applied contexts. These findings underscore that gamification, when applied strategically, can transcend novelty and function as a legitimate customer retention mechanism.

## **6.0 Conclusion and Future Research**

This study provides important insights into how gamification strategies influence customer churn behaviour in entrepreneurial retail contexts, particularly among Millennials in Malaysia's Klang Valley. Grounded in Self-Determination Theory, the research validates that membership programmes, contest rewards, and personalised discounts each directly and statistically significantly impact customer churn reduction. These findings contribute to both academic and managerial discussions by demonstrating that gamification can address the persistent challenge of customer defection through intrinsic motivation pathways. For future research, it would be valuable to explore the mediating roles of loyalty, trust, or emotional engagement in the relationship between gamification and churn. Additionally, longitudinal designs could be used to assess the long-term efficacy of gamification strategies, capturing dynamic shifts in consumer behaviour.

Given that this study is limited to Millennials in Klang Valley, further research should investigate cross-generational or cross-regional comparisons to determine the generalisability of findings. Incorporating qualitative methods could also yield richer insights into the emotional and cognitive mechanisms driving gamification effectiveness. Moreover, the use of purposive sampling, while appropriate for targeting Millennials in Klang Valley, limits the generalisability of the findings beyond this specific demographic and geographic scope. Future studies could benefit from probabilistic or stratified sampling techniques to enhance representativeness. Additionally, the reliance on intention-based measures of churn reduction such as stated likelihood to stay, may not accurately reflect actual behavioural outcomes. These suggestions are to provide a more robust validation of gamification efficacy.

## **7.0 Contributions**

### **7.1 Theoretical Contributions**

This study advances gamification literature by empirically validating the direct effects of three key gamification elements on customer churn, an area previously underexplored in

emerging markets. It extends the application of Self-Determination Theory into the entrepreneurial retail domain, illustrating how gamification satisfies core psychological needs to mitigate churn behaviour. Unlike prior studies that examined loyalty or engagement as mediators, this research isolates churn as the outcome variable, offering a novel perspective in behavioural marketing.

## 7.2 Practical Contributions

For practitioners, the findings provide evidence-based guidance for designing cost-effective gamified interventions aimed at reducing customer churn. Contest rewards emerged as the most effective strategy, suggesting that entrepreneurial firms should prioritise competitive and interactive formats to enhance retention. Personalised discounts also proved impactful, highlighting the importance of data-driven personalisation in campaign design. While membership programmes had a comparatively weaker effect, their structured approach still yields benefits when aligned with consumer motivation. Collectively, these insights offer a strategic roadmap for entrepreneurs seeking to build long-term customer relationships through behavioural engagement techniques.

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