engineering proceedings

MDPI

Proceeding Paper

Correlation between Consumer Characteristics and the International Coffee Chain Brand Membership System: The Gamification Perspective through Apps †

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† Presented at the 2024 IEEE 4th International Conference on Electronic Communications, Internet of Things and Big Data, Taipei, Taiwan, 19–21 April 2024.

Abstract: We explored the correlation between consumer characteristics and international coffee chain brand membership apps. From the perspective of a gamified system, we analyzed differences in members' experiences when using the app. Three elements of the gamification system of the MDE theory were used to analyze members' gamification sentiments: "Achievement", "Challenges", and "Immediate Feedback". Variables representing members' characteristics included gender, age, education level, occupation, monthly income, and recent consumption frequency. In using branded apps, males experienced a stronger sense of "Achievement" compared to females. However, there was no significant difference among members with varying monthly incomes regarding these three gamification elements. Members who made one to four purchases displayed higher levels of "Challenge" and "Immediate Feedback" than those who made no purchases. Such results underscore the importance of member characteristics in diverse gamification experiences. It is recommended that coffee chain brands customize their apps to align with the distinct preferences of their member demographics. Additionally, for members who make frequent purchases, brands must design various challenge levels and provide advanced feedback to enhance their engagement in the gamified system.

Keywords: MDE theory; gamification; achievement; challenges; feedback

Citation: Lin, C.-W.; Lu, M.-J.; Ou Yang, C.-P.; Wang, C.-Y.; Hsu, W.-H.; Chen, S.-S. Correlation between Consumer Characteristics and the International Coffee Chain Brand Membership System: The Gamification Perspective through Apps. *Eng. Proc.* **2024**, *74*, 51. https://doi.org/10.3390/engproc2024074051

Academic Editors: Shu-Han Liao, Teen-Hang Meen and Cheng-Fu Yang

Published: 4 September 2024

1. Introduction

Marketing has evolved from a product-centric focus on selling manufacturer and seller products to a consumer-oriented approach in the information technology era. Currently, it focuses on meeting customer needs, creating engaging experiences, and establishing connections with individual consumers. Gamification is a temporary gimmick or trend in today's information environment and provides a medium for realizing creative gamified experiences. While the term "gamification" has been widely accepted in academia, there is a lack of a unified definition, with various interpretations. Zichermann and Cunningham noted that "game mechanisms" are designed to optimize and enhance the elements of gaming [1]. However, "game elements" lay the foundation for the entire gaming process and constitute the basic elements of a game [1]. The mechanism–dynamics–aesthetics (MDA) framework proposed by Hunicke, LeBlanc, and Zubek divides games into the mechanism, dynamics, and aesthetics [2]. In the context of MDA, the mechanism refers to the conditions, rules, and objectives that drive the continuous progression of the game.

Dynamics involves the interactive behaviors generated through the game's mechanism, while aesthetics pertains to the user's experiences and feelings throughout the process.

We examined Starbucks, an international coffee chain, to assess how this company employs gamification in marketing in this study. We explored Starbucks' strategy of enticing consumers to use the Starbucks Rewards program, which features a game-like system of challenges and tasks. Using the results, we found that customers can receive feedback and rewards and achieve a sense of accomplishment, exclusive perks, and a feeling of individuality, helping to make them perceive themselves as distinct and special. We applied the MDE theory as a framework to explore the correlation between various consumer characteristics and the Starbucks Rewards Program membership system. We investigated the concept of gamification, examining its implications for the Starbucks membership program.

2. Literature Review

Deterding, Dixon, Khaled, and Nacke stated that gamification involves game elements and mechanisms in non-game contexts, thereby enhancing user experience and engagement [3]. On the other hand, Zichermann and Cunningham argued that gamification utilizes game elements and mechanisms to engage users [1]. We adopted this definition of gamification for the Starbucks Rewards membership system of Starbucks. We examined game elements and mechanisms that trigger psychological and emotional factors in users, thereby influencing consumer behavior and attitudes.

Game elements constitute the structure of a game, encompassing design elements such as objectives, rules, real-time feedback, and win/lose conditions to facilitate the smooth progression of the game [1]. Werbach and Hunter categorized elements into challenges, chances, competition, cooperation, feedback, resource acquisition, transactions, rewards, and victory conditions [4]. Challenges refer to tasks that players face and must overcome during their journey, while chances represent the randomness encountered in the game. Competition and cooperation involve individual or group interactions with others. Feedback entails the game providing real-time responses based on the player's situation. Resource acquisition and transactions pertain to obtaining in-game items and engaging in transactions with others. Rewards represent the game's mechanisms for rewarding players upon completing tasks. Lastly, victory conditions define the criteria for a player to achieve victory in the game.

Game mechanisms refer to the design of game elements, shaping the structure and level of enjoyment in a game, serving as a key factor in determining its appeal to players [1]. Werbach and Hunter provided a more detailed classification of game mechanisms, concentrating on crafting feedback mechanisms for players throughout the gaming experience, resulting in distinct sensations triggered [4]. McCarthy proposed a framework for gamification consisting of three elements: mechanism, dynamics, and emotions [5]. By utilizing the mechanism within a game, they observed user interactions and emotions during usage to explore user behavioral intention.

We applied the MDE framework to the Starbucks membership system, using challenges, achievement, and immediate feedback as the game mechanisms. Flatla, Gutwin, Nacke, Bateman, and Mandryk believed that challenges serve as the primary elements associated with reward-related goals [6]. Additionally, Kallioja pointed out that when players complete tasks without rewards as incentives, they are less likely to sustain their participation [7]. Rewards refer to achieving specific goals set by the designer and providing feedback on accomplishments to encourage users to continue challenging themselves. Immediate feedback enables users to be informed about their real-time performance and progress during the task process [7].

As the MDA framework focuses on analyzing and interpreting game design, the MDE framework has been applied to explore how gamification influences user experience. The MDE framework includes the perspectives of both game designers and users, facilitating interaction and feedback to improve game design between designers and cus-

tomers [8]. In this study, we explore the three game elements in the Starbucks Rewards membership system, namely achievement, challenges, and immediate feedback, serving as gamification mechanisms.

Achievement is a key motivator for players to keep playing the game [9]. Yee categorized achievement into promotive, skill-based, and competitive types [10]. These three types are often categorized into exploration, or investigations may focus on one specific type [11]. In this study, achievement was defined in terms of promotive achievement, considering what consumers achieve in the Starbucks membership system, such as earning stars (points) and advancing levels as rewards. Challenges are considered the most crucial factor in the game [12]. Pagulayan, Keeker, Wixon, Romero, and Fuller suggested that appropriate difficulty levels in a game contribute to players perceiving challenges [13]. Hsu pointed out that when the available information and resources in a game are balanced with the player's workload, they create challenges for the player [14]. Challenges were defined as the perceived level of difficulty by users during the Starbucks Rewards membership system game process in this study. Users perceive challenges when the difficulty aligns with their skills. Flatla, Gutwin, Nacke, Bateman, and Mandryk argued that immediate feedback allows users to be aware of their progress and performance in a gamification environment [6]. Kallioja claimed that without progress tracking, it is challenging to determine what victory conditions are missing [7]. In this study, immediate feedback in the Starbucks Rewards membership system was characterized by diverse star levels, challenges, and progress feedback, allowing users to self-challenge.

3. Research Method

3.1. Research Objects and Data Collection

We selected the users of Starbucks Rewards members, utilizing the purposeful sampling method. A questionnaire was distributed online or offline for a survey. The preliminary survey was conducted from 15 January 2021 to 16 January 2021. After excluding invalid questionnaires, 120 valid responses were collected. The questionnaires were distributed again after being modified from 25 January 2021 to 25 February 2021. A total of 450 questionnaires were returned. After eliminating the invalid responses, 439 valid questionnaires were obtained, with a recovery rate of 98%. The questionnaire included consumer characteristics and three constructs, namely challenges, achievement, and immediate feedback, with five selections on a seven-point Likert scale. SPSS was used for statistical analysis with a significance level (α) set at 0.05. Descriptive statistics were employed to examine the distribution of demographic variables, including means, standard deviations, frequency distributions, and percentage statistics. The correlation between challenges, achievement, and immediate feedback in the Starbucks Rewards membership system was explored to investigate various consumer characteristics.

3.2. Analysis Methods

We referred to [12,15] for the measurement of challenges and the measurement method. The measurement items of achievement were adopted from [10,15]. The measurement items of immediate feedback were employed from [16,17].

3.3. Data Analysis for Validity and Reliability

The KMO value must be above 0.60 to be suitable for factor analysis [18]. We employed exploratory factor analysis to assess the validity of challenges, achievement, and immediate feedback. The challenge variables were significant in terms of the Bartlett sphericity at a significance level of $p < 0.5$, and their KMO value was 0.83, indicating suitability for factor analysis. The Bartlett sphericity of the achievement variable was significant ($p < 0.5$), and the KMO value was 0.79, also indicating suitability for factor analysis. For the immediate feedback variable, the Bartlett sphericity test result showed significance ($p < 0.5$), and the KMO value was 0.84. Cronbach's α coefficient above 0.70 indicates high reliability, 0.35−0.70 indicates moderate to high reliability, and below 0.35 indicates low reliability [19].

The challenge, achievement, and immediate feedback variables exhibited a reliability value of 0.84, 0.79, and 0.84.

4. Result

4.1. Demographic Variables

A descriptive statistical analysis was conducted on the demographics of Starbucks Rewards members. Table 1 provides a summary of the results.

Table 1. Summary of demographic variables.

Demographic Variables		Respondents	Percentage (%)
Gender	Male	129	29.4
	Female	310	70.6
Age	22 and below	266	60.6
	23–30	95	21.6
	31–40	23	5.2
	41 and above	55	12.5
Education	High school	24	5.5
	Bachelor's degree	343	78.1
	Master's degree	72	16.4
Occupation	Students	278	63.3
	Military personnel, civil servants, and teachers	31	7.1
	Business and Industry	33	7.5
	Freelance	12	2.7
	Professionals (accountants, lawyers, doctor, etc.)	11	2.5
	Service industry	58	13.2
	Retired personnel	7	1.6
	Others	9	2.1
Monthly income (TWD)	Below 20,000	233	53.1
	20,001–30,000	81	18.5
	30,001–40,000	44	10
	40,001–50,000	26	5.9
	50,001 and above	55	12.5
Frequency of visits to Starbucks within one year	0	39	8.9
	1–4	220	50.1
	5–8	82	18.7
	9 and above	98	22.3
Total		439	100

4.2. Gamification Elements

As shown in Table 2, Starbucks Rewards members scored 4 or above on the variables of gamification mechanisms. Users perceived all gamification elements at an agreement level or above. The "Immediate Feedback" factor scored the highest (mean (M) = 5.60, standard deviation (SD) = 1.00), followed by the "Challenges" factor (M = 4.98, SD = 0.99), and the lowest score was obtained for the "Achievement" factor (M = 4.90, SD = 1.12). For "Immediate Feedback", the item "I can receive feedback about my status through the Starbucks membership system" scored the highest (M = 5.69, SD = 1.10). This indicated that customers perceived that the feedback mechanism allowed them to receive immediate information and understand their membership usage when using the Starbucks membership feedback. For the "Challenges" factor, the item "I think participating in the Starbucks Rewards membership program is very challenging" scored the highest (M = 5.18, SD = 1.18). Customers perceived a high level of challenge in the Starbucks Rewards membership program, and the process of using it encouraged users to overcome these challenges. For the "Achievement"

factor, the item "The discount vouchers, coupons, and small gifts I received in the Starbucks Rewards membership system give me a sense of achievement" scored the highest (M = 5.69, SD = 1.09). Users felt a sense of achievement in the Starbucks Rewards membership system when they received discount vouchers and promotions, enhancing their overall experience.

Table 2. Analysis results of gamification elements.

Factor	Item	Item		Factor	
		M	SD	M	SD
Challenges	1	5.18	1.18	4.98	0.99
	2	4.99	1.28		
	3	4.89	1.28		
	4	5.04	1.95		
	5	4.79	1.40		
Achievement	1	5.38	1.22	4.90	1.12
	2	5.69	1.09		
	3	4.63	1.47		
	4	4.59	1.51		
	5	4.19	1.70		
Immediate Feedback	1	5.65	1.08	5.60	1.00
	2	5.53	1.15		
	3	5.48	1.16		
	4	5.64	1.07		
	5	5.69	1.1		

4.3. Differences in Demographic Variables

As shown in Table 3, there was no significant difference in factors such as "Challenges" and "Immediate Feedback" between different genders. However, there was a significant difference in the "Achievement" factor, showing that males perceived a more significant sense of achievement than females.

Table 3. Gender differences in gamification elements.

Factor	Gender	M	SD	*t*	*p*
Challenges	Male	5.11	1.07	1.83	0.068
	Female	4.92	0.96		
Achievement	Male	5.15	1.16	3.09 *	0.002 *
	Female	4.79	1.09		
Immediate Feedback	Male	5.57	1.06	−0.33	0.744
	Female	5.61	0.97		

* $p < 0.05$.

Starbucks Rewards users with different monthly incomes did not show significant differences in gamification elements, as indicated by the results of one-way ANOVA for the "Challenges", "Achievement", and "Immediate Feedback" factors (Table 4).

Table 5 indicates differences among Starbucks Rewards users with varying consumption frequencies. One-way ANOVA results showed no significant variations in "Achievement", but "Challenges" and "Immediate Feedback" exhibited notable distinctions. Scheffe's post hoc comparisons revealed that users who purchased products one to four times perceive stronger "Challenges" effects than those without any purchases. Regarding "Immediate Feedback", users with five to eight purchases, one to four purchases, and nine or more purchases experienced greater impacts than those without any purchases. Users without any purchases had a less intense perception of "Challenges" and "Immediate Feedback".

Table 4. Analyzing gamification variability based on monthly income.

Factor	Variance Source	Sum of Squares	Df	Mean Square	F	P
Challenges	Between Groups	4.76	4	1.19	1.21	0.307
	Within Groups	427.82	434	0.99		
	Total	432.58	438			
Achievement	Between Groups	3.11	4	0.78	0.62	0.650
	Within Groups	547.03	434	1.26		
	Total	550.14	438			
Immediate Feedback	Between Groups	4.043	4	1.01	1.02	0.396
	Within Groups	429.84	434	0.99		
	Total	433.88	438			

Table 5. Gamification variability based on consumption frequency.

ddd	Variance Source	Sum of Squares	Df	Mean Square	F	P
Challenges	Between Groups	11.28	3	3.76	3.88 *	0.009
	Within Groups	432.31	435	0.97		
	Total	432.58	438			
Achievement	Between Groups	3.94	3	1.31	1.05	0.372
	Within Groups	546.20	435	1.26		
	Total	550.14	438			
Immediate Feedback	Between Groups	14.54	3	4.85	5.03 *	0.002
	Within Groups	419.34	435	0.96		
	Total	433.8	4.8			

* $p < 0.05$.

Differences in game mechanisms were observed across variables. Education, occupation, and monthly income did not affect the game mechanisms significantly, while gender and consumption frequency did. Males showed greater interest in "Achievement" than females, suggesting a male preference for goal achievement. In terms of consumption frequency, "Achievement" displayed no significant differences, but "Challenges" and "Immediate Feedback" did. Users with a consumption frequency of one to four times were more sensitive to "Challenges", while those with five to eight, one to four, and nine or more purchases showed heightened sensitivity to "Immediate Feedback" compared to those without any purchases.

5. Conclusions

We examined the correlation between consumer characteristics and the membership system using the MDE framework. The gamification mechanisms, including challenges, achievement, and immediate feedback, were explored to establish their relationships with consumer traits. The users of Starbucks' membership system were mainly females, aged 22 years old and below, with a monthly income of TWD 20,000 or less. Their average annual number of purchases was one to four. The majority were college or university students, indicating a younger, student-dominated demographic. The analysis of the variables "Challenges", "Achievement", and "Immediate Feedback" revealed that the average score for "Immediate Feedback" was the highest. This study result reveals that the gamification elements of "Achievement", "Challenges", and "Immediate Feedback" positively impacted customer engagement. Among these, "Achievement" has the most substantial influence, followed by "Immediate Feedback". Additionally, the gamification elements of "Chal-

lenges" and "Achievement" had positive effects, with "Achievement" having the most significant effect, while "Immediate Feedback" showed no significant impact.

Male users perceived achievement in gamification at a significantly higher level than females, while no significant gender differences existed regarding the perception of challenges and immediate feedback. Members with recent purchases perceived higher levels of immediate feedback. Those with one to four purchases showed a higher perception of challenges compared to those with no recent purchases. Positive game mechanisms boosted the membership experience. To engage customers, users need to feel achievement, challenges, and immediate feedback. Considering the male's preference for achievement, challenging tasks need to be added to attract male users to the membership program. Gamified memberships support marketing goals. After completing activities, they gain both internal game rewards and tangible benefits. Game rewards trigger a feeling of achievement, and additional tangible benefits can boost consumer achievement.

Future research is necessary to increase sample diversity to understand the impact factors of StarBucks' membership systems on individuals from different social strata. We have not explored consumer satisfaction with the gamified system, usage platform, feedback notifications, etc.., provided by Starbucks. Thus, it is necessary to explore whether these factors also affect customer participation in membership systems. Therefore, it is also recommended to include satisfaction with gamified systems in their studies.

Author Contributions: Conceptualization, C.-W.L.; methodology, C.-W.L.; software, C.-W.L.; validation, C.-W.L., M.-J.L. and C.-P.O.Y.; formal analysis, C.-W.L., M.-J.L. and C.-Y.W.; investigation, M.-J.L., W.-H.H. and C.-P.O.Y.; data curation, C.-W.L., M.-J.L., C.-Y.W. and W.-H.H.; writing—original draft preparation, C.-Y.W., W.-H.H. and S.-S.C.; writing—review and editing, C.-W.L., M.-J.L. and S.-S.C.; visualization, C.-W.L. and M.-J.L.; supervision, C.-W.L.; project administration, S.-S.C. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data are contained within the article.

Acknowledgments: All subjects' enthusiastic participation is greatly appreciated.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Zichermann, G.; Cunningham, C. *Gamification by Design: Implementing Game Mechanism in Web and Mobile Apps*; O'Reilly Media, Inc.: California, CA, USA, 2011.
2. Hunicke, R.; LeBlanc, M.; Zubek, R. MDA: A formal approach to game design and game research. *Proc. AAAI Workshop Chall. Game AI* **2004**, *4*, 1722.
3. Deterding, S.; Dixon, D.; Khaled, R.; Nacke, L. From game design elements to gamefulness: Defining "gamification". In Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments, New York, NY, USA, 28–30 September 2011; pp. 9–15.
4. Werbach, K.; Hunter, D. *For the Win: How Game Thinking Can Revolutionize Your Business*; Wharton Digital Press: Philadelphia, PA, USA, 2012.
5. McCarthy, M.A. Contending with uncertainty in conservation management decisions. *Ann. New York Acad. Sci.* **2014**, *1322*, 77–91. [CrossRef] [PubMed]
6. Flatla, D.R.; Gutwin, C.; Nacke, L.E.; Bateman, S.; Mandryk, R.L. Calibration games: Making calibration tasks enjoyable by adding motivating game elements. In Proceedings of the 24th Annual ACM Symposium on User Interface Software and Technology, Santa Barbara, CA, USA, 16–19 October 2011; pp. 403–412.
7. Kallioja, T. Gamification Kit: A Practical Toolkit for Designing User-Centered Gamification. Master's Thesis, Aalto University, Espoo, Finland, 2017.
8. Goddard, W.; Garner, J.; Jensen, M.M. Designing for social play in co-located mobile games. In Proceedings of the Australasian Computer Science Week Multiconference, Canberra, Australia, 1–5 February 2016; pp. 1–10.
9. Lin, Y.L.; Lin, H.W.; Jiang, Y.W. The structure and cluster of value in social network games. *Xing Xiao Ping Lun* **2015**, *12*, 263.

10. Yee, N. The demographics, motivations, and derived experiences of users of massively multi-user online graphical environments. *Presence Teleoperators Virtual Environ.* **2006**, *15*, 309–329. [CrossRef]
11. Chen, C.; Leung, L. Are you addicted to Candy Crush Saga? An exploratory study linking psychological factors to mobile social game addiction. *Telemat. Inform.* **2016**, *33*, 1155–1166. [CrossRef]
12. Sweetser, P.; Wyeth, P. GameFlow: A model for evaluating player enjoyment in games. *Comput. Entertain.* **2005**, *3*, 3. [CrossRef]
13. Pagulayan, R.J.; Keeker, K.; Wixon, D.; Romero, R.L.; Fuller, T. User-centered design in games. In *The Human-Computer Interaction Handbook*; CRC Press: Boca Raton, FL, USA, 2002; pp. 915–938.
14. Hsu, S.H.; Kao, C.H.; Wu, M.C. Factors influencing player preferences for heroic roles in role-playing games. *CyberPsychology Behav.* **2006**, *10*, 293–295. [CrossRef] [PubMed]
15. Ho, Y.L. The Effect of Gamification Branded APP on Brand Attitude and Purchase Intention. Master's Degree, National Sun Yat-sen University, Kaohsiung, Taiwan, 2017.
16. Eckardt, L.; Robra-Bissantz, S. Learning Success: A Comparative Analysis of a Digital Game-Based Approach and a Face-to-Face Approach. In Proceedings of the BLED 2018 Proceedings, Bled, Slovenia, 17–20 June 2018.
17. Li, C.Y.; Lee, S.M.; Shiu, S.Y. Sale from Fun: The Influence of Gamification on Brand Attachment and Cross-buying. *J. Inf. Manag.* **2020**, *27*, 265–290.
18. Kaiser, H.F. An index of factorial simplicity. *Psychometrika* **1974**, *39*, 31–36. [CrossRef]
19. Nunnally, J.C. *Psychometric Theory*; McGraw-Hill Book Company: New York, NY, USA, 1978.