Gamification Mechanism and Elements Affecting Gamification Dynamics: A Case of Generation Z in Thailand
กลไก และองค์ประกอบของเกมมิฟิเคชันที่ส่งผลต่อพลวัตของเกมมิฟิเคชัน: กรณีศึกษากลุ่มคนเจนเนอเรชั่น แซด ในประเทศไทย

Naphat Wuttaphan
ณภัทร วุฒธะพันธ์

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การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษากลไก และองค์ประกอบของเกมมิฟิเคชันที่ส่งผลต่อพลวัตของเกมมิฟิเคชัน โดยเป็นการศึกษาเชิงปริมาณภาคตัดขวางของกลุ่มเจนเนอชั่น แซด จำนวน 350 คน ในประเทศไทย วิเคราะห์ข้อมูลโดยใช้สถิติเชิงบรรยาย ได้แก่ ความถี่ ค่าเฉลี่ย และส่วนเบี่ยงเบนมาตรฐาน รวมทั้งการวิเคราะห์ความแปรปรวน ค่าสหสัมพันธ์ และการวิเคราะห์ถดถอย ตามลำดับ ผลการวิจัยพบว่า เพศ และระดับการศึกษาที่แตกต่างมีพลวัตของเกมมิฟิเคชันแตกต่างกันอย่างมีนัยสำคัญทางสถิติ .05 อย่างไรก็ตาม การวิเคราะห์ค่าสหสัมพันธ์ พบว่า การให้ผลตอบกลับ และความท้าทายของเกมมีค่าสหสัมพันธ์สูงสุด ($r = .80$, $p < .00$) รองลงมาได้แก่ ความท้าทาย และชนิดของเกม ($r = .77$, $p < .00$) นอกจากนี้ ผลการวิเคราะห์การถดถอยด้านกลไกของเกม พบว่า ค่าคะแนน ระดับ กระดานผู้นำ และทีม สามารถพยากรณ์พลวัตของเกมมิฟิเคชัน องค์การสามารถนำผลการวิจัยไปประยุกต์ใช้ในการออกเป็นนโยบายในการพัฒนาทรัพยากรมนุษย์ในองค์การโดยใช้กระบวนการเกมมิฟิเคชัน ซึ่งจะสามารถทำให้องค์การเพิ่มขีดความสามารถในการแข่งขันได้ต่อไป

คำสำคัญ : เกมมิฟิเคชั่น ; เจนเนอเรชั่น แซด ; กลไลเกม ; พลวัตของเกม ; องค์ประกอบของเกม

ผู้ช่วยศาสตราจารย์ คณะวิทยากรจัดการ มหาวิทยาลัยราชภัฏพิบูลสงคราม, Assistant Professor, Faculty of Management Sciences, Pibulsongkram Rajabhat University

ABSTRACT

This study aims to discover gamification mechanisms and elements affecting gamification dynamics. A quantitative cross-sectional study was used to collect data from 350 generation Zs across Thailand. The data were analyzed using descriptive statistics such as frequency, means, and standard deviation As well as an analysis of variance (ANOVA), correlation, and regression respectively. The research found that there is a significant dynamic at .05 level of gamification for different genders and education levels. However, an analysis of correlation found that game feedback and game challenges ($r = .80$, $p < .00$) had the highest value, followed by the challenges and types of game ($r = .77$, $p < .00$). Moreover, the results of game mechanism found that and points, levels, leaderboards, and teammate(s) are significantly affect game dynamics. The organization can use the research result to apply for policy formulation in order to develop human resource using the gamification process, which can help the organization increase its competitive capability continually.

Keywords : Gamification ; Generation Z ; Game Mechanism ; Game Dynamics ; Game Elements

Introduction

The objective of this study is to examine the factors of game mechanism, and game elements affecting game dynamics of Generation Z in Thailand. At the current stage, the world is changing rapidly by technological and data analytics. The pattern of workplace learning as well as human resource training and development drive organizational effectiveness. Game-based learning and gamification shares similarity in their target aim to enhance engagement, and motivation in the learning process. According to Moore-Russo, Wiss, and Grabowski (2017) mentioned that game means revolves around structuring educational tasks infused with inherent game elements and principles while gamification involves incorporating gaming elements such as point systems, leaderboards, badges, or other game-related components into typical learning tasks with the purpose to amplify engagement and motivation. Gamification involves using elements of games, such as competition, rewards, and problem-solving, to increase employee motivation and engagement in business tasks (Nivedhitha and Manzoor, 2020). The goal is to make work more enjoyable and rewarding, similar to how recreational games provide enjoyment and challenges. By incorporating game-like elements into business processes, organizations can encourage employees to participate more fully and become more invested in their work (Grünewald, Kneip, and Kozica, 2019). Gamification in human resource development also serves as a tool to encourage employee motivation and engagement. Furthermore, the psychology behind using gamification is beneficial for organizations to discover in order to design and convince employees' intrinsic motivation to learn as well as to tap into human nature and motivate employees to work smarter and more effectively (Grünewald, Kneip and Kozica, 2019). In the past decade, various organizations not only the private sector but also the public sector utilized gamification techniques to increase employee performance in terms of sharing and interacting. Gamification involves tracking and measuring the actions of users during gameplay in order to monitor their progress and activity by quantifying behaviors through scores, levels, and charts, it is possible to gain a comprehensive understanding of the resources being used and create specific profiles for each individual. For instance, real-time monitoring of employee activity is a crucial aspect of gamification, as it allows organizations to track and analyze the effectiveness of the game and make any necessary adjustments. It involves using game-like tasks and community building to foster employee experiences and promote desired behaviors by setting goals and offering rewards for completing tests, such as points and badges, gamification encourages employees to work together and develop leadership skills. Additionally, games are often designed to reflect and simulate real-world scenarios, providing a hands-on, interactive learning experience for employees. According to Thomas, Baral, and Crocco (2022) claimed the benefit of gamification and human

resource development (is) that gamification could enhance employee learning, increase task performance, and connect to employee wellness in the workplace. Generation Z, born between 1995 and 2010, is often referred to as the "Net Generation" or "iGeneration," was born in the midst of rapid technological growth and the widespread adoption of the internet. According to Brune (2021) discovered that gaming is common among members of Generation Z, with a large majority (81%) reporting that Generation Zs have played games in the past six months. Gen Zs tend to spend more of their leisure time on gaming activities than on any other form of entertainment, including television, movies, and music. Thus, gaming is a particularly influential and important part of the culture and daily lives of Gen Z individuals. Gen Z gamers tend to spend an average of 7 hours and 20 minutes playing games per week. A significant portion of them (69%) have also reported spending money on games, which indicates a willingness to invest in gaming activities. So Gen Zs are willing to invest both time and money into their gaming experiences. As a matter of fact, 71% of Gen Z gamers report watching game-related content, with gameplay, comedic gaming videos, and their favorite streamers as the most popular types of content. It also involves socializing and identities of Gen Z individuals, watching game-related videos and streams, and engaging with gaming communities. A third of Gen Zs talk about games with friends and family, and half of Gen Z gamers visit sites or blogs to stay up to date with gaming news as well as join online gaming community sites or social media groups. This highlights the importance of gaming in the culture and daily lives of Gen Z individuals.

By the time more members of this generation enter the workforce, they will play an increasingly important role in shaping the future of work. According to Wuttaphan (2018), mentioned that Generation Z is expected to enter the workforce and become the second-largest generation in the labor force within the next decade, surpassing both Generation X and the Baby Boomers. According to a 2018 analysis by the Pew Research Center, Generation Y currently holds the largest share of the labor force at 35%, followed by Generation X at 33%, the Baby Boomers at 25%, the Silent Generation at 2%, and Generation Z at 5%. However, the proportion of Gen Z in the labor force is steadily increasing. HR professionals and top management are required to handle multi-generation diversity in the organization, especially the generational gap. Marching gamification with Generation Zs is critical to attracting, retaining, and motivating Generation Zs talented in the workplace. Moreover, in attempting to engage Generation Z in the workplace, organizations are required to conduct and implement modern human resource training and development approaches such as embracing gamification as the new tool for training Generation Z to be compatible with Generation Z's characteristics.

Objectives

To examine the factors of game mechanism, and game elements affecting game dynamics of Generation Z in Thailand. The hypothesis of this study is game mechanism and game elements affect game dynamics.

Literature Reviews

Generation Theory

To motivate Gen Z, organizations may need to provide a clear career advancement plan, reasonable compensation, and rewards. While money is not the primary motivator for Gen Z, they do value good relationships with peers and supervisors. Gen Z tends to be highly talented and high-performing, so it is essential for organizations to provide the right incentives to engage and retain the Z-generation. Generation Z, born amid rapid technological growth, is comfortable using a variety of social networking channels for communication, including instant messaging applications for example Snapchat, WhatsApp, Line, and Facebook Messenger, as well as face-to-face communication through platforms such as Facebook and Line. In addition, Gen Z people are active users of social media, expressing themselves through the posting of pictures, words, hashtags, videos,

music, and clips on platforms like YouTube, Snapchat, WhatsApp, TikTok, WeChat, and Instagram. Gen Z tends to prefer sharing stories and using virtual pinboard like Pinterest. Gen Zs also use social media, websites, and applications to keep in touch with others, gain acceptance, seek advice and recommendations, search for information, and share their opinions and personal information online (See Miller and Grace, 2016; Wuttaphan, 2018). According to Saxena and Mishra (2021) indicate that the modern learner, Gen Z, differs from previous generations, necessitating innovative pedagogical approaches for educators to effectively engage this specific group of learners. As learning patterns evolve among contemporary learners, the education system must adapt and integrate suitable tools that align with their needs.

Gamification

The general concept of gamification, according to Sailer and Homner (2020) said that game is "a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome." Game design typically includes several key components: goals, rules, challenges, and interaction based on voluntary participation, having an alternate reality, and artificial limitation (Vesa, Hamari, Harviainen and Warmelink, 2017). These elements work together to provide mental and/or physical stimulation and challenge players to use their skills and knowledge to succeed. Many games are designed to help players develop practical skills, serve as a form of exercise, or serve an educational, simulational, or psychological purpose. The combination of these components can make games a valuable tool for learning, development, and enjoyment. Gamification is a design approach that incorporates the key drivers of games, such as goals, rules, challenges, and interaction, into the user experience. This human-focused design approach optimizes the overall input of the user by fulfilling their feelings, motivations, and purpose. Gamification is a powerful strategy for influencing and motivating individuals and groups, and is being increasingly utilized in a variety of industries, including corporate, marketing, and education, to improve customer/user engagement, build brand loyalty, and incentivize employees to perform at higher levels.

The game mechanism, elements, and dynamics

While game mechanics and gamification are often used interchangeably, it is in fact, two distinct concepts. Game mechanics refer to the various actions, behaviors, and control mechanisms that are used to add game-like elements to an activity, such as points, badges, and leaderboards. In other words, game mechanics are the specific tools used in gamification. As for gamification, on the other hand, refers to the overall process of using game mechanics and other game-like elements to increase engagement and motivation. Gamification is the larger strategic scale of using those tools to create a compelling and engaging user experience. The game mechanism consisted of points, levels, badges achievement, virtual goods, leaderboards, and teammates, and game elements comprised of the goal, rules, type, times, reward, feedback, challenges, and 3Cs (conflict, competition, or cooperation) (Sailer and Homner, 2020 ; Suwannaslip, 2021). Game dynamics are an important aspect of game design, as they shape the way that players approach the game and influence their decisions and actions. By understanding and carefully designing game dynamics, game designers can create engaging and rewarding gameplay experiences for players attempting to create more engaging and compelling user experiences. Game mechanics satisfy basic human desires and create addictive experiences that motivate users to take certain actions. The result of gamified experience is driven by game dynamics (rewards, status, achievement, self-expression, competition, and altruism), which are the underlying rules and systems that shape player behaviors and determine the outcomes of the game. As a result, gamification, game elements, and dynamics work together through game mechanism to create engaging and motivating experiences that can influence and shape user behavior (Denton, 2022 ; Sailer and Homner, 2020 ; Goethe, 2019 ; McGonigal, 2011 ; Suwannaslip, 2021).

Conceptual Framework

The literature review has found that game dynamics have been influenced by game mechanisms and game elements (Goethe, 2019 ; McGonigal, 2011 ; Suwannaslip, 2021). Hence, this study examines points, levels, badge achievements, virtual goods, leaderboards, and teammates, as game mechanism, and game elements affecting game dynamics as the conceptual framework in Figure 1.

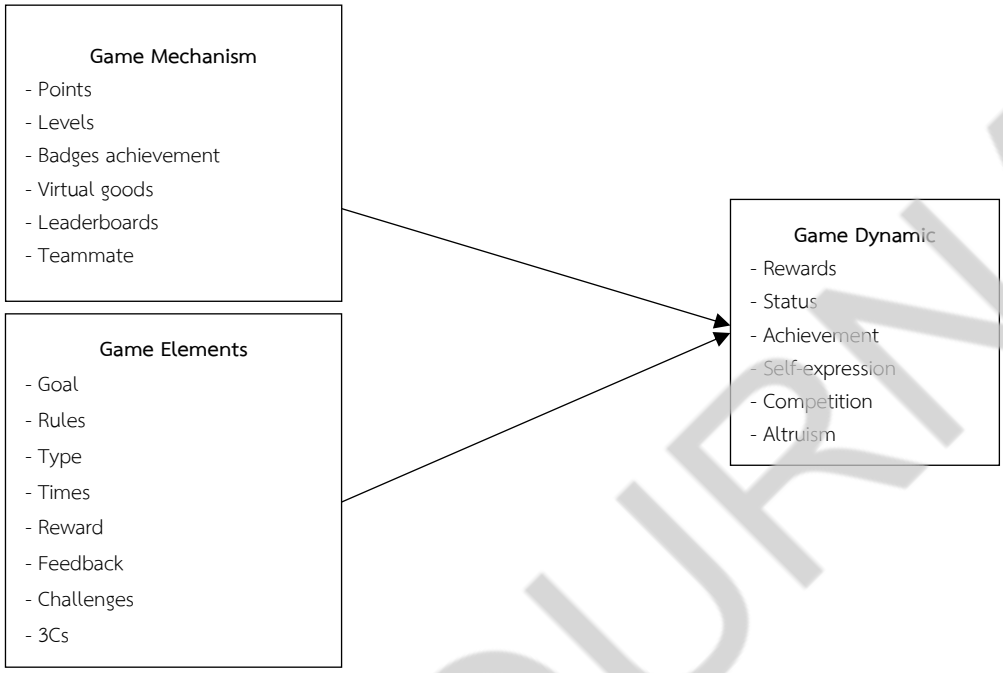

Figure 1 Conceptual Framework

Research Methodology

Population and Samples

The main population of this study was Generation Zs around Thailand who were bone from 1995 to 2010 and had experienced playing games at least 1. The samples of this study were calculated by using Cochran (1953) to estimate a sample size with a significant level of .05 with a convenience random sampling technique implemented. However, the returned 350 questionnaires out of 400 have proceeded to data analysis.

Research Instruments

The research instrument of this quantitative was a questionnaire that took around 10 to 15 minutes to complete as well as had no ambiguity reported, and the language in the survey was understandable to the participants. All scale of this study was adapted a five-point Likert Scale from strongly agreed to strongly disagree of challenging satisfaction, where 1.00 – 1.80 means the lowest, 1.81 – 2.60 means low, 2.61 – 3.40 means medium, 3.41 – 4.20 means high, and 4.21 – 5.00 means the highest. Furthermore, the content validity through the three experts for Item-Objective Congruence was conducted and the result was more than .6. Then the tried-out for non-sample to find the Consistency Reliability (Cronbach Alpha Coefficient) was .87 throughout the questionnaire. The demographic data consisted of gender, age, educational level, and religion. The independent variables are the game mechanism which are points, levels, badges achievement, virtual goods, leaderboards, and teammates, and game elements which are the goal, rules, type, times, reward, feedback, challenges, and 3Cs (conflict, competition, or cooperation) (Sailer and Homner, 2020 ; Suwannaslip, 2021). The dependent variable is the game dynamics consisted of rewards, status, achievement, self-expression, competition, and altruism (Sailer and Homner, 2020 ; Goethe, 2019 ; McGonigal, 2011 ; Suwannaslip, 2021).

Data Collection

This study used the cross-sectional research design in order to collect the data in a single time from September 2022 to October 2022. The structure onsite and online questionnaires were sent to self-report to Generation Zs across Thailand. The samples of the questionnaire were "You enjoy diverse game mechanism that offers rewards or incentives for team members", and "You enjoy rapid rewards that respond to you instantly".

Data Analysis

The data were analyzed by using descriptive statistics i.e. frequency, and percentage for demographic data. Means and standard deviation were used to analyze the level of game mechanism, elements, and dynamics. Besides, ANOVA was used to test a significant between demographic data, game mechanism, and elements of game dynamics. Furthermore, correlation and regression were applied to analyze the relationship and influential effect of independent variables on a dependent variable by using the statistical software package.

Results and Discussion

The results of factors of game mechanism and elements affecting game dynamics were characterized into five parts, defined as demographic data, level of game mechanism, elements and dynamics, significant testing, correlation, and regression analysis. The sample of this study mostly are male (n = 224, 70%), female (n = 90, 28.1%), and others (n = 6, 1.9%). Junior Gen Zs (age 12 – 16 years) are 4 (1.3%), middle Gen Z (age 17 – 22 years) are 67 (20.9%), and most are senior Gen Z (age 23 – 27 years) are 249 (77.8%). Most of the samples are studying bachelor's degree (n = 285, 89.1%), high school (n = 17, 5.3%), vocational degree (n = 14, 4.4%), and graduate degree (n = 4, 1.3%) respectively, and the religion of Buddhist the most (n = 305, 95.3%), then Christian (n = 5, 1.6%), Others (n = 6, 1.9%), none (n = 3, 0.9%), and finally Islam (n = 1, 0.3%) respectively. However, the data show the demographic and game dynamics significant testing. It revealed that gender and educational level are significant to the game dynamics at a statistically significant 0.05. Moreover, the game mechanism and game elements are all significant to game dynamics, as in table 1.

Table 1 The Significant Testing

Variables	Sum of Squares	df	Mean Square	F	Sig
Demographic data					
Gender	21.47	49	0.43	2.25	0.00
Age	11.37	49	0.23	1.16	0.23
Educational Level	26.63	49	0.54	2.75	0.00
Religion	28.32	49	0.57	1.07	0.35
Game mechanisms					
Points	70.99	49	1.44	5.53	0.00
Levels	81.23	49	1.65	9.05	0.00
Badges achievement	74.04	49	1.51	5.42	0.00
Virtual goods	95.60	49	1.95	6.69	0.00
Leaderboards	89.31	49	1.82	7.13	0.00
Teammate	85.64	49	1.74	10.22	0.00

Table 1 (Continued)

Variables	Sum of Squares	df	Mean Square	F	Sig
Game elements					
Goal	97.18	49	1.98	13.49	0.00
Rules	95.26	49	1.94	9.87	0.00
Type	91.45	49	1.86	13.44	0.00
Times	94.34	49	1.92	10.94	0.00
Reward	102.59	49	2.09	12.41	0.00
Feedback	91.91	49	1.87	12.61	0.00
Challenges	88.57	49	1.80	11.94	0.00
3Cs	107.61	49	2.19	9.95	0.00

The correlation analysis among observable variables of game mechanisms, game elements, and game dynamics found the top three highest correlation consists of Feedback (B6) and Challenges (B7) ($r = .80$, $p < .001$), then Challenges (B7) and Type (B3) ($r = .77$, $p < .001$), and Challenges (B7) Reward (B5) ($r = .77$, $p < .001$). However, 4 pairs which are Type (B3) and Times (B4), Rules (B2) and Challenges (B7), Type (B3) and Achievement (C3), and Achievement (C3) and Self-expression (C4) have a correlation value at $r = .75$, $p < .001$, as reported in table 2.

Table 2 Correlation Analysis

Variables	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4	C5	C6
Points (A1)	1																			
Levels (A2)	.64**	1																		
Badges ach (A3)	.62**	.63**	1																	
Virtual goods (A4)	.56**	.63**	.69**	1																
Leaderboards (A5)	.52**	.59**	.60**	.68**	1															
Teammate (A6)	.56**	.61**	.58**	.51**	.59**	1														
Goal (B1)	.55**	.64**	.55**	.59**	.68**	.70**	1													
Rules (B2)	.55**	.56**	.57**	.59**	.59**	.63**	.74**	1												
Type (B3)	.59**	.65**	.57**	.53**	.58**	.71**	.71**	.73**	1											
Times (B4)	.52**	.62**	.53**	.55**	.56**	.60**	.71**	.72**	.75**	1										
Reward (B5)	.55**	.58**	.52**	.53**	.59**	.69**	.73**	.69**	.72**	.68**	1									
Feedback (B6)	.55**	.61**	.56**	5.9**	.64**	.69**	.72**	.73**	.73**	.70**	.79**	1								
Challenges (B7)	.55**	.66**	.59**	6.2**	.64**	.68**	.74**	.75**	.77**	.72**	.77**	.80**	1							
3Cs (B8)	.53**	.55**	.59**	6.3**	.64**	.60**	.65**	.70**	.62**	.60**	.63**	.70**	.74**	1						
Rewards (C1)	.52**	.64**	.56**	.63**	.61**	.64**	.69**	.66**	.65**	.68**	.71**	.69**	.70**	.70**	1					
Status (C2)	.45**	.54**	.52**	.51**	.64**	.56**	.62**	.60**	.64**	.58**	.59**	.63**	.62**	.68**	.70**	1				
Achievement (C3)	.58**	.59**	.55**	.54**	.54**	.65**	.66**	.66**	.75**	.66**	.61**	.71**	.64**	.61**	.68**	.61**	1			
Self-expression (C4)	.55**	.64**	.51**	.54**	.56**	.66**	.70**	.66**	.69**	.65**	.66**	.69**	.69**	.60**	.70**	.62**	.75**	1		
Competition (C5)	.52**	.63**	.49**	.51**	.59**	.59**	.68**	.62**	.66**	.65**	.66**	.67**	.68**	.62**	.67**	.69**	.67**	.70**	1	
Altruism (C6)	.57**	.61**	.52**	.49**	.53**	.65**	.65**	.62**	.67**	.64**	.59**	.57**	.63**	.48**	.65**	.55**	.70**	.70**	.63**	1

Note **p < 0.00

Furthermore, for the sake of detail testing in this study, the regression analysis is divided into two influential examinations which are 1) game mechanisms affect game dynamics, and 2) game elements affect game dynamics.

In term of game mechanisms affect game dynamics, the collinearity statistics found the tolerance between .38 to .50, and the VIF value range from 1.99 to 2.60. Which indicated that there is multicollinearity free (Tolerance greater than 0.10 and VIF less than 10) (Vanichumcha, 2007) as revealed in table 3.

Table 3 Collinearity Statistics of Game Mechanisms

Variables	Tolerance	VIF
Points	.48	2.06
Levels	.41	2.40
Badges achievement	.39	2.52
Virtual goods	.38	2.60
Leaderboards	.44	2.26
Teammate	.50	1.99

According to Table 4, the data revealed that game mechanism as an independent variable affects game dynamics .70, correlation value equals .84 with the standard error of the estimate is .31.

Table 4 Model summary of the regression of game mechanisms affect game dynamics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.84[a]	.70	.69	.31

a. Predictors: (Constant), Points, Levels, Badges achievement, Virtual goods, Leaderboards, Teammate
b. Dependent Variable: Game dynamics

Moreover, the ANOVA testing indicates that Mean Square for regression is 124.69, the residual is 30.39, and the significant level is .00. It reveals that game mechanism could predict game dynamics significantly (Table 5). Moreover, it was found that there is a strong relationship between feedback and challenge as well as the type, rewards, achievement, and self-expression of Generation Zs. This could be compatible with a study by Satomuhammas (2018) and Rakrong, Banjongrod, and Utitasarn (2022) found that using gamification techniques could enhance students' achievement in Mathematics with a high level of satisfaction.

Table 5 The ANOVA testing of Game Mechanisms affects Game Dynamics

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	72.65	6	12.10	124.69	.00[a]
	Residual	30.39	313	.09		
	Total	103.05	319			

a. Predictors: (Constant), Points, Levels, Badges achievement, Virtual goods, Leaderboards, Teammate
b. Dependent Variable: Game dynamics

According to Table 6, the coefficients result of the game mechanism affect game dynamics. The regression found that points, levels, leaderboards, and teammates significantly affect game dynamics except for badge achievements and virtual goods. However, the regression value of points is .08 indicating that if Generation Zs are challenged by points for 1, the level of being challenged by game dynamics will increase by .089 which is how the game works. So the regression model is as below:

$\hat{y}$ = .501 + .08(Points) + .22(Levels) + .17(Leaderboards) + .30(Teammate)
and Z = .10(Points) + .25(Levels) + .21(Leaderboards) + .34(Teammate)

Table 6 The Coefficients of Game Mechanisms affect Game Dynamics

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
1	(Constant)	.50	.13	-	3.74	.00
	Points	.08	.03	.10	2.37	.01
	Levels	.22	.04	.25	5.38	.00
	Badges achievement	.00	.04	.00	-.13	.89
	Virtual goods	.07	.03	.09	1.86	.06
	Leaderboards	.17	.03	.21	4.59	.00
	Teammate	.30	.03	.34	8.04	.00

a. Dependent Variable: Game dynamics

Finally, game elements affect game dynamics. The collinearity statistics found the Tolerance between .22 to .38, and the VIF value range from 2.61 to 4.52 which indicated that there is multicollinearity free (Tolerance greater than 0.10 and VIF less than 10) (Vanichumcha, 2007) as revealed in Table 7.

According to Table 8, the data revealed that game mechanism as an independent variable affects game dynamics .78, correlation value equals .88 with the standard error of the estimate is .26.

Table 7 Collinearity Statistics Game Elements

Variables	Tolerance	VIF
Goal	.31	3.19
Rules	.29	3.44
Type	.28	3.48
Times	.33	2.96
Reward	.28	3.48
Feedback	.24	4.00
Challenges	.22	4.52
3Cs	.38	2.61

Table 8 Model summary of the regression game elements affect game dynamics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.88[a]	.78	.78	.26

a. Predictors: (Constant), Goal, Rules, Type, Times, Reward, Feedback, Challenges, 3Cs
b. Dependent Variable: Game dynamics

According to Table 9, ANOVA testing indicates that the Mean Square for regression is 145.45, the residual is 21.73, and the significant level is .00. So, game dynamics could be predicted by game mechanism significantly.

Table 9 The ANOVA testing of game elements affect game dynamics

Model		Sum of Squares	df	Mean Square	F	Sig
1.	Regression	81.31	8	10.16	145.45	.00[a]
	Residual	21.73	311	.070		
	Total	103.05	319			

a. Predictors: (Constant), Goal, Rules, Type, Times, Reward, Feedback, Challenges, 3Cs
b. Dependent Variable: Game dynamics

The results from table 10 show that goal, game type, times, feedback, and 3Cs (conflict, competition, or cooperation) could predict the game dynamics significantly except for rules, rewards, and challenges of the game. Besides, the regression equation is below:

$\hat{y}$ = .47 + .18(Goal) + .22(Type) + .13(Times) + .10(Feedback)
and Z = .21(Goal) + .24(Type) + .15(Times) + .12(Feedback)

Table 10 The Coefficients of Game Elements affect Game Dynamics

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
1.	(Constant)	.47	.10	-	4.42	.00
	Goal	.18	.04	.21	4.63	.00
	Rules	.01	.04	.01	.27	.78
	Type	.22	.04	.24	5.05	.00
	Times	.13	.03	.15	3.43	.00
	Reward	.06	.04	.07	1.53	.12
	Feedback	.10	.04	.12	2.36	.01
	Challenges	.00	.04	.00	.09	.92
	3Cs	.15	.03	.19	4.59	.00

a. Predictors: (Constant), Goal, Rules, Type, Times, Reward, Feedback, Challenges, 3Cs
b. Dependent Variable: Game dynamics

Furthermore, the regression analysis reveals that points, levels, leaderboards, and teammates influenced game dynamics. These collaborate with Lithoxoidou et al., (2020) that mentioned employees and teams compete with others, and engage with the task provided as well as knowledge contribution through

publicly displayed points on a dashboard. Consequently, the research confirmed that four types of game mechanisms which are points, badges, levels, and leaderboards are primarily practiced in the workplace effectively. In addition, the game element of goal, game type, times, feedback, and 3Cs (conflict, competition, or cooperation) could predict the game dynamics significantly. The empirical study by Nivedhitha and Manzoor (2020) said that goals are the major effect that influences gamification, especially goal choice, goal revision, and goal commitment. Moreover, Thomas et al (2022) also insisted that step goals, challenges, and badges related to physical health. Not only goals but also times could affect gamification dynamics because providing real-time feedback in the sequential challenge and rewards motivates employees while playing the game (Landers, Bauer, and Callan, 2017 ; Thomas et al., 2022). However, Liu, Huang, and Zhang (2018) believed that providing a longer time frame could affect gamification in learning and long-term enjoyment. On the other hand, Nivedhitha and Manzoor (2020) argued that time pressure influenced gamification in the organization. So time frame, and team provided for the game will urge the employee to challenge and pressure to achieve the goals suitably. In accordance with Kaufman (2018) and Krishnamurthy, Selvaraj and Gupta (2022) confirmed that utilizing gamification has the potential to enhance learning, involvement, and collaboration through its capacity to facilitate real-world practicality. Additionally, it can contribute to the encouragement of risk-free healthcare decision-making, remote education, the analysis of learning, and the rapid provision of feedback.

Conclusion

The characteristics of the current learner, Gen Z, diverge from those of past generations, demanding inventive teaching methods for educators to engage them effectively. As learning trends shift within today's learners, the education system must adjust by incorporating fitting tools that cater to their requirements. The results found that gender and educational level and the game mechanism and game elements are significant to the game dynamics. Generation Zs have fundamental needs and desires that drive individuals' behavior and shape their motivations. These desires can include the need for reward, status, achievement, self-expression, competition, and altruism, among Generation Zs. Furthermore, HRD and Game designer should work~~ing~~ together to adapt the game's difficulty level to the employee's skill level, incorporating type, themes, or topics that the employee is interested (in), and offering options or customization that allow the employees to adapt the game experience to their preferences as well as taking into account the individual characteristics of the player, paraphrase games can be more engaging and enjoyable for the Generation Zs. Overall, games can be a fun and rewarding way to challenge and improve employee skills. Understanding these fundamental needs and desires can help HRD professionals and top management create more engaging and motivating employee's experiences that are tailored to the specific needs and motivations of employees. Gamification is the use of game-like elements and mechanics in non-game contexts, such as education, training, or employee motivation. It can be a powerful tool in the field of human resource development (HRD) to incentivize employees to complete certain tasks or goals, or to reward employees for demonstrating or encouraging desirable positive behaviors because it appeals to people's natural desire to compete and achieve. As well as provide a sense of accomplishment and recognition with more interactive and enjoyable, which can lead to better retention, career advancement, and improved performance. Thailand has widely embraced gamification across education, marketing, and workforce training to boost engagement, motivation, and educational results. Educational initiatives incorporate gamified apps and platforms to create a more engaging and enjoyable learning experience. In marketing, businesses leverage gamification to encourage customer engagement and loyalty. Overall, Thailand is actively exploring gamification as a versatile tool to foster participation, learning, and customer interaction across various sectors. In Thailand, the organization should adopt gamification as the learning procedure involves breaking down into smaller segments and utilizing positive reinforcements.

Including designing gamification to user-friendly menu-driven approaches used in online and blended learning, and integrating gamification techniques.

Contribution

At the organizational level, HRD professionals could design and develop adult learning and development that is compatible with each generation as well as prepare workforce planning by utilizing the gamification technique as a major HRD policy in order to enhance the organization's values by matching gamification with information technology, HR analytics in attempting to support a full employee potential to work. Motivating employees through gamification using points, levels, and teammates by allowing employees to create their own goals, and providing autonomous game design, achievement, challenges, as well as timeline could increase employees' enjoyment while playing the game. However, HR professionals should be carefully implementing gamification in HRD by gender differences, employees' attitudes, and the type of game, for instance, some people might not be comfortable working as a team, including too much competition might contribute to conflict among employees.

Suggestion

Similar to any other research, this study focused on Generation Zs, future research should be conducted on Generation Ys, and compare the results. Second, this study quantitative methods, however, a qualitative method is required for future studies. Third, this study divided game mechanism and game element's effect on game dynamics in order to separately focus on examining in detail, future research should integrate game mechanism and elements to test for more generalization. Finally, future research should expand to investigate game mechanics, elements, and dynamics on other psychological factors such as engagement, work attitude, OCB (Organizational citizenship behavior), and well-being.

Limitations

The limitations of this study could be identified as the first, this study was conducted in purely quantitative research, it should be confirmed by the qualitative study as well. Second, the sample size was 350, next study should be expanded to larger samples.

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