

A Study on the Implementation of gamification in Mobile Payment Services

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모바일 페이먼트 서비스의 게임화 구현에 관한 연구

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Abstract The importance of gamification is garnering increased attention in the corporate world. Gamification refers to using game mechanics and thinking patterns in non-game domains to promote user engagement. By reviewing the definition of gamification and related literary research, we aim to understand how to put theory into practice and determine the organization of gamification's main features. Next, in order to understand the current implementation methods of mobile payment gamification marketing. We analyze popular mobile payment apps as case studies. To examine the effectiveness of game mechanics on mobile payment marketing to determine whether there is a positive impact on brand loyalty and stickiness. The results are used to identify shortcomings in gamified mobile payment systems. Finally, we propose a gamification framework model for mobile payments and offer recommendations for underutilized game mechanics based on previous cases. Future research can reference our model for deeper studies on the effectiveness and impact of gamified mobile payments.

Key Words : Gamification, Gamification design, MDA framework, Game mechanisms, Mobile payment, Financial services

요 약 게임화의 중요성은 기업들의 관심을 끌고 있다. 게임화는 비게임 영역에서 게임 역학과 사고를 사용하여 사용자 참여를 유도하는 것을 말한다. 문헌을 통해 게임화의 정의와 관련 연구를 검토함으로써 이론을 어떻게 실천하는지 그 주요 특징들을 정리하는 것이 목적이다. 다음으로, 모바일 페이먼트 게임화 마케팅의 현재 구현 방식을 이해하기 위해 인기 모바일 페이먼트 앱을 사례 연구로 선택하여 이에 대한 게임 메커니즘의 효과를 조사하여 브랜드 충성도와 고착성에 긍정적인 영향을 미치는지 여부를 분석한다. 그 결과는 게임화된 모바일 결제 시스템의 단점을 파악하는 데 사용된다. 마지막으로 모바일 결제를 위한 게임화 프레임워크 모델과 이전 사례에서 활용도가 낮은 게임 메커니즘을 위한 디자인을 제안한다. 향후 연구는 게임화된 모바일 페이먼트의 효과와 영향에 대한 심층 연구로 우리의 새로운 모델에 참고할 수 있다.

주제어 : 게임화, 게이미피케이션 디자인, MDA 프레임워크, 게임 메커니즘, 모바일 페이먼트, 금융 서비스

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1. Introduction

1.1 Background and Purpose

Smartphones have become a necessity in people's lives, providing lifestyle services such as banking, shopping, business transactions, and diverse social communication platforms. In addition, with the prevalence of COVID-19, the development of new online services for smartphones is also increasing [1]. Among these, one of the mobile payment apps used gamified marketing by offering a lucky draw after checkout, resulting in an increase in its number of users and transactions. As reported, the gamification of financial services is no longer only used for entertainment and marketing but is increasing in use for financial applications and enhancing customer loyalty [2]. Companies use gamification to maintain users' attention and engagement, however, there has been little published information on which gamification mechanisms and components are used in conjunction with mobile payment services and their resulting efficacy. Therefore, this study will examine the concept and characteristics of mobile payment services and gamification, identify which gamification components are associated with mobile payment service apps, and collect and analyze gamification marketing examples based on mobile payment services via theoretical examination. Finally, we will design a gamification framework for mobile payments through case study analysis. In addition, we propose gamification design guidelines and suggestions that can effectively promote users to participate in and form continuous relationships with services.

1.2 Scope and Methodology

This study will focus on mobile payment apps

that are mainly used in Korea, China, and Taiwan and conduct a case study on the gamification components and usage of mobile payment services. The methodology and contents of this study are as follows. Chapter 1 explains the background and purpose of this study and describes the study's scope and methodology, discussing the study's legitimacy and the overall system. Chapter 2 provides a literature review of the gamification design framework and game components by examining the definition and principles of gamification. Then, the content and characteristics of previous applications and components of gamification mechanisms as applied to different domains are reorganized in order to use the analytical framework for understanding the main points and focus of gamification marketing in the mobile payment domain. Chapter 3 presents an analytical framework based on theoretical considerations, a qualitative analysis of case studies on gamification marketing which examine the effectiveness of their implementation, and a presentation of the results of the study. Chapter 4 proposes a gamification framework model designed with mobile payments in mind based on the results of the previous analysis and attempts to design unique game mechanisms that encourage users' interest and form continuous relationships. Chapter 5 concludes with a summary of this study's findings and implications.

2. Literature Review

2.1 Gamification

Gamification is defined as the use of game components and mechanisms to facilitate user engagement and problem-solving in non-game environments [3]. It emphasizes the nature of

the gamification experience as a process that supports overall value creation for users [4]. Gamification is designed to expand beyond games and fun; it serves a specific purpose and users enjoy the process. Its main purpose is to create fun, motivate, enhance the user experience, encourage participation, and create opportunities for ongoing engagement [5]. A published study has summarized the four main components of gamification: (1) a progress path that uses challenges and stories to motivate users to complete tasks and stay engaged; (2) feedback and rewards that motivate users to upgrade; (3) social connections that create competition and cooperation through social networks; (4) an interface and user experience that allows users to have fun and enjoyable experiences [6]. In short, gamification integrates game components, incentives, rule structures, and feedback systems into non-game contexts to engage and motivate people, which in turn changes their behavior.

2.2 MDA framework

Robin Hunicke proposed a framework for describing the relationship between game systems and players that consisted of mechanics, dynamics, and aesthetics [7](Table 1), as a framework for describing the relationship between game systems and players. One research mentioned that game mechanics as a functional device of games means inducing users' behavior, which is a necessary form of games [8]. In other words, gamification is a form of using game mechanics to induce the psychological needs and experiences of the user. In addition, another study mentions that gamification marketing is actively using game mechanics as a way to increase communication with customers [9]. Based on the items commonly mentioned in the previous studies,

the components of game mechanics were organized as shown in [10-12][Table 2]. According to the literature, to make gamification actually encourage users to participate and take action, many modern companies use the MDA framework as their basis, starting from the core game mechanics, which mainly include the five principles and components of challenge, competition, achievement, reward, and relationship.

Table 1. The MDA framework

	Description
Mechanics	Create the functioning components of the game.
Dynamics	The player's interactions with those mechanics.
Aesthetics	How the game makes the player feel during their interactions.

Table 2. Game mechanics components of gamification derived from literature

Researcher	Game mechanics	Game components
Bunchball. Inc	Reward, Status, Achievement, Self-expression, and Competitive	Points, Levels, Challenges, Virtual goods, Leaderboards, Gifting, and Charity
S. H. Hsu & J. W. Chang & C. C. Lee.	Achievement, Interpersonal relationship, and Roleplaying	Rewards, Goal setting, Reputation, Status, Instruction, Competition, Altruism, Group identification, Self-expression, and Time pressure
H. T. Kim	Challenge, Competition, Achievement, Compensation, and Relationship	Mission, Quest, On-boarding, Level, Progress bar, Ranking, Badge, Trophy, Status, Point, Money, Bonuses, Invitation, Recommendation, and Gift

2.3 Gamification marketing for mobile payments

Gamification marketing, a technology that applies the concepts of fun, rewards, and competition in games, is attracting attention from the financial community [2]. A report claims that gamification applied to financial

services goes beyond simple entertainment and marketing and impacts consumers' increased use of financial services apps and enhanced customer loyalty [13]. Gamification of mobile payments can be described as a behavioral understanding of demand and customer desires and experiences designed to engage people in achieving their financial goals [14]. Thus, mobile payments have started challenging the traditional financial services industry. Through gamification mechanisms and components, users are driven to engage and sell their services, making mundane transaction tasks fun and mapping functional benefits to consumer benefits. In the next section, we take a case study of mobile payments in Korea, China, and Taiwan to explore which components of the five main game mechanisms in the MDA framework are widely used in modern apps.

3. Case study

3.1 Case Selection and Methodology

Social media services attract an average of 2.25 hours of consumer attention per day and are increasingly becoming major platforms for daily activity. So much so that consumers now use social media platforms to purchase products in-store and online. The most notable example is WeChat Pay in China, while Kakao and LINE are also widely used as payment services in Asia [16]. This chapter collects data from qualitative research methods based on the theoretical basis of the five major game mechanisms compiled from the literature. This chapter summarizes the current implementation status and analysis of mobile payment gamification marketing development. The case study is based on a report of the top ten mobile payment services in the Asian market in 2019 [17], including Kakao Pay (Korea), Line Pay

(Taiwan), and WeChat Pay (China), which are all based on messaging apps that are combined with mobile payment systems. The purpose of this report is to understand how to implement gamification marketing with the gamification elements, gamification mechanism, interaction process, and presentation approach mentioned in the MDA framework theory for a variety of mobile payment services.

3.2 Case analysis

In Kakao Pay, Line Pay, and WeChat Pay, it can be concluded that the six modes of mobile payment in marketing operations can be divided into new members, merchant cooperation, checkout, fun games, special events, and transfers. This case study collected more than 50 gamification marketing cases of mobile payment. After reclassifying the cases with the same characteristics, we analyzed the aspects of the gamification mechanism, gamification method, and gamification effect. These cases can be sorted into four types, namely: fun and interactions, rewards and feedback, win-win, and relationship-up type.

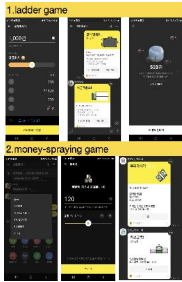
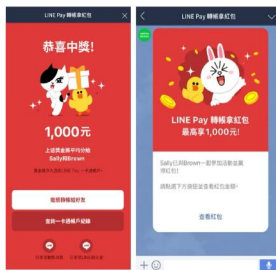
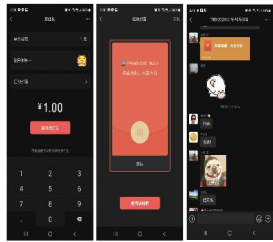
3.2.1 Fun and interaction type

Among the three types of action payments, game mechanics, such as competitive challenges and compensations, are used as in Table 3 to give random rewards to the winners. Activities like mini-games can induce people to actively participate out of curiosity and a desire to have fun. In the case of Kakao Pay, people can use a ladder game in a group chat room to make purchases. As well, they can participate in a money-spraying game to win the highest prize in a first-come-first-served competition. A similar approach can be found in WeChat Pay, which turns the Chinese traditional red envelope custom into a game; users can send

red envelopes in chat rooms and share in the fun of drawing prizes. Line Pay also promotes the use of mobile payment with a game that allows users to transfer money to their friends to win a red envelope. Through game-based marketing, Line Pay achieved over NT\$100 million in transactions in just three days [18] and enabled users to increase their familiarity with the transfer function. These examples are enjoyable for users, despite their competitive nature as it allows people to win prizes or other awards. At the same time, these games indirectly produce a new sharing culture, as users can interact with each other in a fun way, which is more engaging than traditional financial services, and allows for users to have

easy and simple money transfer and payment functions. When examining fun and interactive cases, we found that people not only enjoyed the gamification experience but also gained a better understanding of the technical functions of mobile payments. One study suggests that perceived enjoyment is felt by users when using media and is one of the key motivations for individual media use [19]. This study has verified that individuals are more likely to continue to use media if they achieve self-fulfillment by consuming enjoyable content, colors, interactions, and animated images [20]. Therefore, by the same token, this is likely to increase brand loyalty if the user enjoys the process of using the mobile payment service.

Table 3. Fun and interaction type

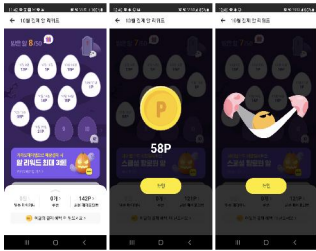


	Kakao Pay		Line Pay		WeChat Pay	
Case illustrations						
Descriptions	Chat rooms can determine a loser to pay the bill through a ladder game or play a money-spraying game to win money in a first-come-first-served contest		If money is transferred to a friend via Line Pay, both you and your friend will receive a bonus. The more you transfer to your friends, the more money you earn		WeChat Pay turns the traditional red envelope custom into a game. Users can send red envelopes in chat rooms and share the fun of drawing prizes	
Game mechanics and application of components	Challenge	Be a Winner	Challenge	Transfer money with Line pay	Challenge	Be a winner
	Competition	Win the most cash	Competition	Win the most cash	Competition	Win the most cash
	Achievement	Winner's honor	Achievement	Get rewarded	Achievement	Winner's honor
	Compensation	Win bonuses	Compensation	Bonuses	Compensation	Bonuses
	Relationship	Simple games for fun interaction with friends	Relationship	Share, participate in fun interactions	Relationship	Share the fun of the lottery

3.2.2 Reward and feedback type

Reward and feedback cases, as the name implies, use compensation mechanisms to promote the use of mobile payments. The most common way is to use mobile payments to receive points or discounts at checkout. The achievement of reward acts as a goal and an incentive for users to keep engaging and trying. Due to this type of practical incentive, users may use mobile payments more often. As shown in [Table 4], Kakao Pay has set up a lottery with animated special effects to attract users to use mobile payments, so that they can get random points or special prizes upon checkout. As for Line Pay, in addition to offering cash rewards in the form of points, it also encourages consumers to use Line Pay more often through a game in which users receive a limited number

of emotion stickers for completing a purchase. According to Line Pay's statistics [21], its point reward mechanism has led to a 90% increase in transaction value in 2021, indicating that Line Pay is a part of users' daily lives and continues to win their trust. In addition, WeChat Pay has created special days, rules, and spinning games to provide special offers. As well, to expand online and offline usage, WeChat Pay uses games such as lucky draws, roulette, and point collecting to give consumers rewards, and actual spending privileges when they reach a certain amount of spending. In addition to making the games more interesting, it can also be used to shape the brand image in a way that does not appear abrupt, but also can stimulate the desire to spend, especially in the consumption of concessions.

Table 4. Reward and feedback type

Case illustrations	Kakao Pay		Line Pay		WeChat Pay	
						
Descriptions	Provide a lucky draw after checkout, double points, or draw a discount if a certain amount of checkouts is reached in a month		Receive a limited number of free emotion stickers and rewards for purchases up to a certain amount through Line Pay		Regularly hold a discount day on the day of the spin to draw discounts	
Game mechanics and application of components	Challenge	Receive 50 golden eggs	Challenge	Purchase up to a certain amount	Challenge	Lucky draw for purchases up to a certain amount
	Competition	–	Competition	–	Competition	–
	Achievement	Collect golden eggs and win prizes	Achievement	Win a limited amount of stickers and points	Achievement	Receive special offer
	Compensation	Point offers and prizes	Compensation	Reward points and stickers	Compensation	Coupons and discounts
	Relationship	–	Relationship	–	Relationship	–

3.2.3 Win-win type

The win-win type uses mobile payments to cooperate with other companies through marketing and promotions to maximize mutual benefits. In the following case study, as shown in Table 5, Kakao Pay cooperated with an ice cream company to launch a gamified marketing game in which users collected ice cream ingredients in exchange for physical coupons. Users can enjoy a sense of accomplishment, and also help friends to collect materials. In addition to providing fun and rewards, it also can promote users to encourage their friends to participate and make purchases together. Line Pay, on the other hand, uses a game that integrates the Starbucks members app, providing co-branded products for completing the task of collecting loyalty cards. This brings users into the store through a convenient payment experience and provides them with payment feedback so that they are willing to return to the store to make more purchases,

thus creating a win-win model. In addition, WeChat Pay is also actively implementing a membership system to partner with businesses. In the case of McDonald's, the WeChat Pay Shake Game allows users to earn coupons, making it a natural and smooth experience to use WeChat Pay at McDonald's and to share offers with friends. After the implementation of the game, more than 60% of the transactions in a single store were made with WeChat [22]. These three mobile payment applications are also social messaging apps that extend to payment services. The advantage is that through the powerful social database and massive user base, users' consumption behavior can be captured from multiple channels, turning the mobile customer flow into online fans, and forming a huge database to bring customized experiences to users. From this, brands can achieve more effective customer reach and stickiness.

Table 5. Win-win type




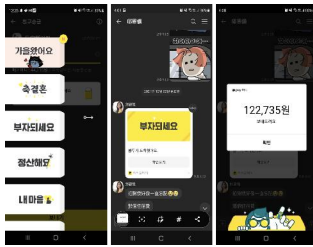
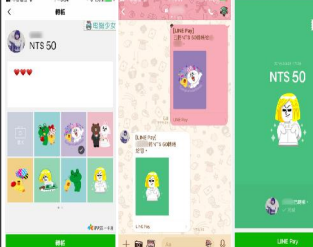
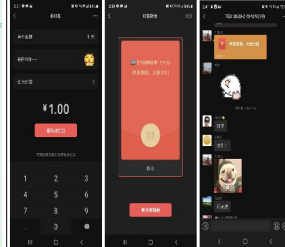
Case illustrations	Kakao Pay		Line Pay		WeChat Pay	
						
Descriptions	Kakao Pay has partnered with Baskin Robbins, offering a promotion where users collect materials for coupons, which can be exchanged for actual product coupons or Kakao Pay points		Starbucks has partnered with LINE Pay, and when LINE Pay is used to pay for any large drink, users will get 1 point, which can be exchanged for a co-branded product when 9 points are collected		Customers can get hamburger coupons and redeem hamburgers on the spot by "shaking" through WeChat at McDonald's. A total of 6 shake periods are set, and 120 hamburger coupons are released in each period	
Game mechanics and application of components	Challenge	Gather ice cream materials	Challenge	Collection of points, card tasks	Challenge	Shake to draw rewards
	Competition	–	Competition	–	Competition	–
	Achievement	Complete the mission	Achievement	Complete the mission	Achievement	Win rewards
	Compensation	Coupon	Compensation	Receive co-branded product rewards	Compensation	Coupon
	Relationship	Exchange materials with friends	Relationship	Share information to encourage participation	Relationship	Share Information to encourage participation

Table 6. Relationship-up type

Case illustrations	Kakao Pay		Line Pay		WeChat Pay	
						
Descriptions	Money can be sent to friends in an envelope via mobile payment transfer in a chat room, which makes the traditional steps of sending money to a friend more visible					
Game mechanics and application of components	Challenge	-				
	Competition	-				
	Achievement	-				
	Compensation	Free transfers, congratulations, pocket money, bonuses				
	Relationship	Gratitude and blessings from friends and family with gifts				

3.2.4 Relationship-up type

The common feature of this case study is based on the combinations of payment services with social messaging apps. Social interactions are an important component of social platform use, providing for personal social satisfaction [23]. Social interaction has been identified as an important factor in promoting the continued use of social media, and studies have found that online social interaction significantly influences information contribution behavior in social communities [24]. The relationship-up case, as shown in Table 6, also relies on relationship game mechanisms related to social interactions for gamification marketing. In the study of these three mobile payment apps, the relationship game mechanic turns the traditional act of remittance (putting money in an envelope and giving it to a recipient) into a visible interaction that conveys feelings of gratitude to users' friends. With the

visualization, the interaction between machine and human is no longer only an impersonal click of a button; the animated character design and seasonal wishes message strengthens the interaction and adds warmth to the process of using financial services. As well, when mobile payment transfers are used to increase interactions between two parties, the fun and social satisfaction of games will have a positive impact on the continued use of mobile payments according to previous research [15,23,24].

3.3 Case study results

After regrouping the characteristics and current status of the cases based on the five common game mechanisms of the MDA framework compiled in Chapter 2, Table 7 shows the differences between the presentation of game components and the mechanism of the MDA framework in comparison with the

payment of these three mobile payment services. Among them, it is found that the game component of the competition mechanism of level and ranking is not used in mobile payments. Instead, many game components are designed based on the concept of a lottery. In these cases, it is found that the game components of mobile payment, such as grades, badges, and other honorary recognitions, are not directly related to the design. Therefore, it is inferred that if the interface is designed to only show rewards, it will not directly positively affect the usage and transaction volume of mobile payments. Therefore, design is less focused on. In this study, we categorized the types of gamified mobile payments according to the studied cases and re-examined which game mechanisms are used in the current main marketing channels of Kakao Pay (abbreviated as K), Line Pay (abbreviated as L), and WeChat Pay (abbreviated as W) for gamification design. As shown in [Table 8], the game mechanism used is indicated as O, while Δ is a mechanism that is used, but not directly shown in the design. A common point found is that the main design approach is to use compensation mechanisms to provide user benefits. These designs not only use a single mechanism and game components but are also often

supplemented with various game mechanics such as challenges and relationship-building functions that enhance the user experience and maintain participation. As seen in the game content design, mobile payment companies are actively bringing entertainment and challenges to users, offering rewards when goals are achieved. The Gamification marketing approach has been proven through data and research to be effective in maintaining stickiness by providing users with a more robust play and usage experience [24].

Table 7. Common game mechanics and components of mobile payments

Game mechanics	Common game components	Game elements of mobile payment
Challenge	Mission, Quest, On-boarding	Mission, Quest
Competition	Level, Progress bar, Ranking	Progress bar, Lucky draw
Achievement	Badge, Trophy, Status	x (no direct presentation method)
Compensation	Point, Money, Bonuses,	Point, Money, Bonuses, Emotion stickers
Relationship	Invitation, Recommendation, Gift	Invitation, Recommendation, Gift

Table 8. Analysis of the gamification marketing model and the common mechanics in mobile payments

	Challenge			Competition			Achievement			Compensation			Relationship		
	K	W	L	K	W	L	K	W	L	K	W	L	K	W	L
New members	-	-	-	-	-	-	-	-	-	-	o	o	-	o	o
Merchant cooperation	o	o	o	-	-	-	-	-	-	o	o	o	-	-	-
Checkout	o	o	o	-	-	-	Δ	Δ	Δ	o	o	o	-	-	-
Fun games	o	o	-	o	o	-	Δ	Δ	-	o	o	-	o	o	-
Special events	o	o	o	o	o	o	Δ	Δ	Δ	o	o	o	o	o	o
Transfers	-	-	-	-	-	-	-	-	-	o	o	o	o	o	o

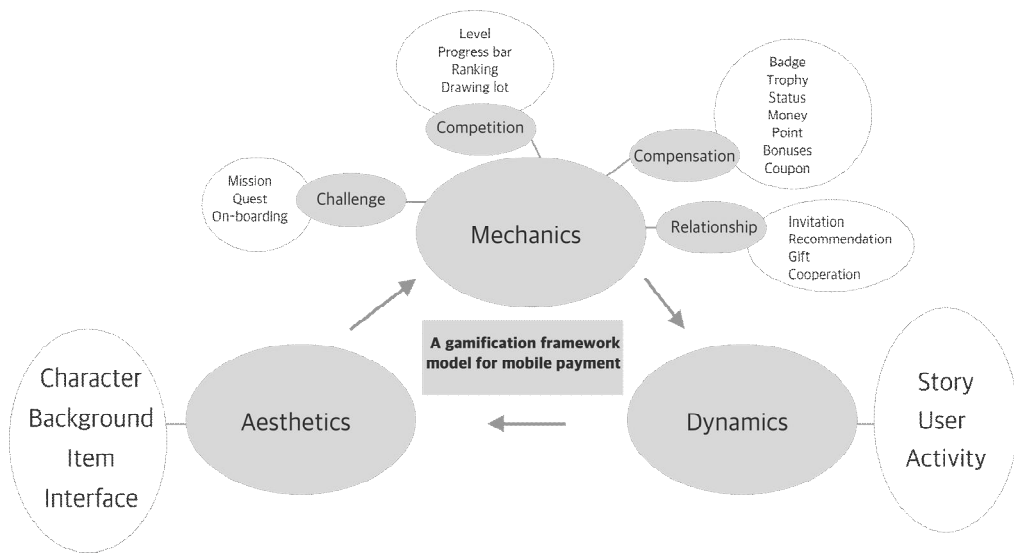


Fig. 1. An MDA framework model for implementing game mechanisms centered on mobile payments

4. A gamification framework model for mobile payment design

Based on the case study results, this chapter proposes an MDA framework model for the use of game mechanisms with mobile payments at the core Fig. 1. We found many examples that combine compensation mechanisms with quest challenges or include asking friends to help with quests to support brand relationship building. In contrast, according to the results of the case study, there is currently no case of gamification design based on the sense of achievement mechanism for mobile payments. We believe that a “sense of achievement” is largely subjective and usually triggered by completing tasks or receiving rewards. In the process of using mobile payment systems to conduct transactions, the main design of the achievement mechanism is relatively limited. Therefore, compared with previous studies, we propose using the four mechanisms of challenge, competition, compensation, and relationship as the design framework for gamified mobile payments.

4.1 A gamification framework model for mobile payment design

We found gamification mobile payment systems commonly reward users with a compensation mechanism. However, if everyone receives prizes, it may attract many users to participate but it would not be more effective at creating deeper brand loyalty among participants. Making good use of the competition mechanism not only provides a platform for users to show off their “glory” or “victory” but takes advantage of the desire to win, thus improving brand stickiness. Therefore, this paper attempts to focus on the competition mechanism in the design proposal of the gamification of mobile payments in the hope of improving the diversity and direction of mobile payment design. Fig. 2 shows the design example. The goals are 1) to promote users’ desire to bid for prizes through offering unique rewards and 2) to ensure awareness of the ability to accumulate more chips (coins rewarded after checkout) to bid for prizes and increase chances of winning through frequent

use of the payment checkout system. The three benefits of mobile payments are: 1) increasing users through the lucky draw; 2) increasing use of the payment system through motivation to get more chips (coins); 3) the formation of long-term relationships between users and the payment system, resulting in increased brand stickiness.

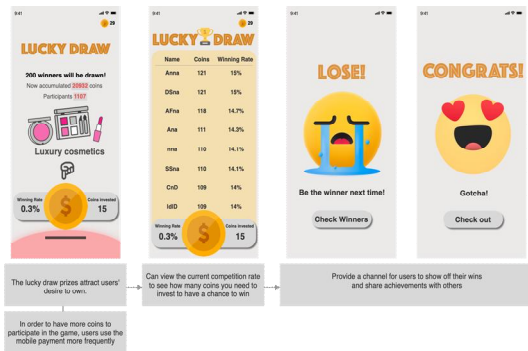


Fig. 2. Competition game mechanics-centered gamification of mobile payment design

4.2 Relationship game mechanics-centered gamification of mobile payment design

People use smartphones to interact with each other through general communication, sharing information, and sending gifts to express gratitude. Using the relationship game mechanism in the gamification design of mobile payment systems, users can find enjoyment in the process by sharing their thoughts and feelings, which can lead to enhanced brand relationships. Fig. 3 focuses on the relationship mechanism in the design proposal with the hope of improving the gamification design of mobile payment systems. We propose the following idea: It is common to save money through mobile payments, however, it is rare to save money together with other users. Therefore, we propose a design that allows users to participate in savings plans alongside their friends by invitation. There is an

"Endowed Progress Effect" in behavioral economics, which states that people are more motivated to achieve their goals when given the opportunity to achieve them [25]. When applied to the behaviors associated with saving money, if each time money is saved, people feel they are "one step closer to their goal", it will help them to use saving behavior to accumulate continuously. In Fig. 3, the piggy bank button is used to remind you to save, as when the button is clicked there is an automatic deduction so that you can monitor your savings. Watching the amount in the piggy bank increase with the number of deposits can help motivate users to save. In addition, mission points can be earned to use for gifts. The three benefits of this are: 1) the invitation to complete savings plans together can improve relationships between people; 2) the function of transferring money from mobile payments to a piggy bank at regular intervals makes financial management easier and more accessible; 3) aspects of the UI design, such as a savings progress bar and animated interactions when financial goals are achieved, can make saving interesting and allow for a sense of accomplishment, which in turn increases brand stickiness.

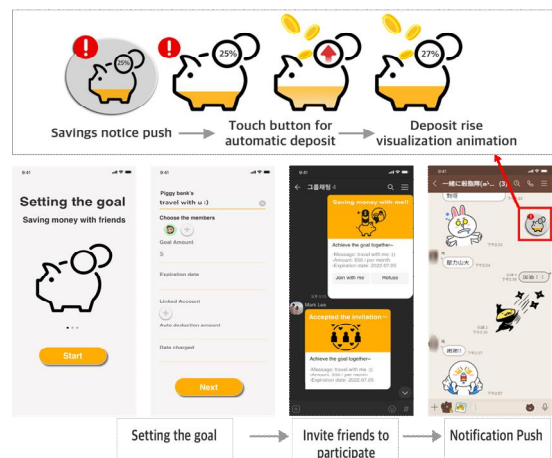


Fig. 3. Relationship game mechanics-centered gamification of mobile payment design

5. Conclusion

In recent years, gamification has become one of the most popular trends among enterprises. It is used to examine the efficiency of optimized system functions and as a mode of thinking that prioritizes and satisfies human psychological motivations and needs (user experience). Thus, gamification design is the use of gamification components and mechanisms to increase users' willingness to continue using a product. We reviewed the research and literature related to gamification and the game mechanics and components of MDA frameworks and analyzed the gamification components of three mobile payment systems, Kakao Pay (in Korea), WeChat Pay (in China), and Line Pay (in Taiwan). The main purpose of the analysis was to determine whether gamification components are effective in mobile payment apps, whether they help maintain the continuity of app usage, and which gamification components are mainly employed in effective designs. Finally, the similarities and differences in the gamification components of the three mobile payment apps were compared to suggested areas that could be reinforced. The results of the analysis show that the gamification design of mobile payment systems is currently dominated by compensation game mechanisms, which provide users with use motivation through rewards. Among them, there are few cases of gamification using achievement mechanisms because the main purpose of mobile payment systems is transactions and the feeling of achievement in a process is more indirect and subjective. From this research, we propose a gamification framework model for mobile payments. The common game mechanisms and components of the MDA framework are

combined to identify four game mechanisms: challenge, competition, compensation, and relationship. We propose a gamification framework model that is more suitable for mobile payment design considerations. In addition, design proposals are made for competition and relationship game mechanisms, which are the less utilized mechanisms in the case studies. It is hoped that this paper can provide a reference for the appropriate use of gamification components in apps and help in the understanding of the impact on user behavior, user engagement, and loyalty, providing suggestions and methods for integrating appropriate gamification components in specific areas to improve the enjoyment and diversity of mobile payment gamification design. Future research can refer to our MDA gamification framework model to develop new research models to study in-depth the effect and impact of mobile payment gamification.

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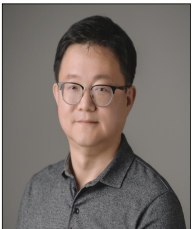


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