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# Integrating the Mobile Game Item and Customer Loyalty Mileage in NFT

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**ABSTRACT:** Some online media use the mileage system a lot. Also, many companies are generating profits using the mileage system. The mileage system was first serviced by airlines in the late 1980s, and now it has many good functions and features. Also, many industries benefit from the mileage system used by airlines in other industries. However, mileage is not being introduced in the game industry, and the service is not provided using the concept of points returned to users, which is a pure function of mileage. So, the payment system developed a lot in the mobile industry has a better and easier payment system than the current online industry. Although many mobile games are being made worldwide, there are currently many games that have a lifespan depending on the nature of the game. For increasing the lifespan of these games, games are constantly changing. However, the revenue model continues to stand still with partial fee-for-service. Therefore, it was found that the mileage system used in various fields such as internet shopping malls and airlines is good in attracting customers and increasing satisfaction through the thesis. Therefore, this study suggested a new revenue model using mileage to help extend the game's life because it was thought that a revenue model that helps increase the game's lifespan is needed even for the revenue model of mobile games that are standing still. In particular, this study focused on the recent issue of game items as NFTs using blockchain technology.

**KEYWORDS:** Partial Payment, Mileage, Mobile Game, NFT.

## 1. INTRODUCTION

We live in an era of rapid development of the video game industry. Since the advent of video games in the 1970s, it took more than 35 years for the gaming market to grow to $35 billion in 2007[1]. However, $137.9 billion was created in 2018, which means an additional value of $100 billion was created in just 11 years[1]. As a mobile revenue structure, a partial payment model has been used a lot since the time of online games. The current partial payment sales model is a representative micropayment-based billing method of mobile social network games and directly affects the revenue. An effective partial monetization revenue model induces continuous consumption by users and guarantees stable revenue [2].

However, the game life of mobile games is much better than that of online games. Also, although there is a difference of several months depending on the game's content, the overall lifespan is low [3]. Mobile games are constantly changing, and in the games of foreign companies, they are enjoying continuous popularity as a single game and ongoing service for 2 years. Currently, many games have a lifespan of the game depending on the nature of the game (development direction). For extending the lifespan of these games, the games are constantly changing, but the revenue model part continues to stand still with the partial payment. Therefore, it was found that the mileage system used in various fields such as internet shopping malls and airlines is good in attracting customers and increasing satisfaction through the thesis. Also, recently, the game industry has been paying attention to NFTs. In particular, game companies are proposing a new model of partial payment by issuing game items as NFTs.

In this situation, this study thinks that a profit model that helps increase the game's lifespan is also needed for the profit model of mobile games. Therefore, this study proposes a model that integrates game items and mileage based on NFT, which helps extend game life.

## 2. LITERATURE REVIEW

### 2.1 Partial Payment of Mobile Game

Partial payment is a method in which billing is divided into a part used for free and a part used for a fee, rather than billing for all services (products). Partial payment is a method mainly applied to Internet online game services. Games are used for free, but paid services are provided to purchase or use specific items or services. Ralf (2010) said that in a game to which a partial payment model

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is applied, the game itself is not a means of income, and it should be recognized that income must be obtained through goods and services during gameplay [4].

John (2012), as the president of Sony Online Entertainment, mentioned the effectiveness of partial payment through successful cases while applying partial payment to MMO (Massive Multiplayer Online) games they service. John emphasized that in future MMO games, the cost that users pay for the game should be freely made through partial payment, and it should be necessary to provide users with many options [5]. In this study, it was mentioned that the efficiency of partial payment is high.

Mitch Lasky (2012) summarizes that partial monetization proceeds through the stages of interest in the game, installation, continuous gameplay, payment of fees for paid products, and repeated payment as the stages of generating revenue [6]. In this study, to make good use of the flexibility of the partial payment model, a means to grasp the user's needs was mentioned quickly, and the possibility as a means of additional profit creation was suggested.

**2.2 Customer Loyalty Program**

Customer loyalty encourages consumers to shop more consistently [7]. They are customer attitudes and behaviors that favor a brand over all competing products, regardless of whether they are satisfied with the product or service. Customers can demonstrate loyalty to price, brand, company and other customers. However, customer loyalty results from recognizing the positive emotional experience, physical attribute-based satisfaction, and the value of experience that includes a product or service [5]. A loyalty program is assumed to be a structured marketing effort that provides rewards and thus encourages loyal buying behavior that potentially benefits the company [6]. Reward programs are provided to customers who frequently purchase from the company. The loyalty program allows customers to receive advanced access to new products, special offers, or free merchandise. Customers typically register their personal information with the company and sometimes provide value to the customer by giving a monetary or non-monetary program for the company. Customer loyalty and engagement can create or ruin a company. The rewards program therefore represents a strategic investment in all types of organizations. However, as it has grown rapidly, it still suffers from inefficient conditions. However, the blockchain has been described as a powerful technology that helps realize the value of customer loyalty programs. Any organization with a reward program (from bank to airline) can be mindful of the efficiency, cost savings, and brand loyalty that blockchain technology can provide [6].

One of the originalities of the business is that the company moves towards the customer. Research has shown that this is achieved through blockchain technology that improves customer loyalty programs [7]. Recent advances in blockchain technology have given marketing managers the tools to create a new generation of customer data and activities and security and privacy issues that arise with all additional participants to assess the level of control. Blockchain technology is still in the early stages of adoption but may be useful for loyalty program providers. Even if standardization is far from reality, hundreds of blockchain initiatives are already taking place in various industries. One attractive feature of loyalty rewards is that they are not central to business revenues and operations, so companies that want to implement a blockchain for customer loyalty programs can help reduce administrative costs, improve customer experience, and promote user engagement. As a rule, the blockchain support loyalty platform is recognized and understood by the organization's corporate and managerial owners, who are expected to thrive the most.

As a result of analyzing a total of 11 research hypotheses by the relevant study using model setting through structural equations, the remaining 8 except for the relationship between emotional benefit-brand attitude, economic usefulness-brand attitude, and diversity of use benefits-brand attitude The hypotheses of dogs were found to have a significant relationship. Looking at the hypotheses supported through empirical analysis, looking at the effect of mileage program attributes on customer satisfaction, it was found that customer satisfaction increased as convenience, emotional benefits, economic usefulness, and diversity of benefits increased [8]. Oliver (1980)'s study was seen to prove the serial relationship between 'satisfaction → attitude → behavioral intention' [9], and Boltonand Draw (1991) found that if one is satisfied with a purchased brand, the more favorable attitude toward the brand. was expected to form [10]. Based on the previous studies of Jihyeon Kang (2008), it was found that the mileage program affects customer satisfaction and customer satisfaction affects the brand attitude. However, as revealed in previous studies, it was found that mileage program attributes do not directly affect brand attitude but can affect brand attitude only when satisfaction is felt.

Park (2002) found that if the possibility of using points (miles) is easy, many users have a strong desire to increase the purchase frequency and purchase amount [11]. Through these studies, the mileage system can easily use the benefits of mileage, and the more diverse the methods used, the higher customer satisfaction.

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Many people experience problems that can penetrate many areas, including general sales and recruitment and retention of loyal customers and employees. The blockchain for customer loyalty programs covers all aspects of most businesses. Recently, it is used to promote a product, service, or organization for sales, attraction, maintenance, and customer retention purposes. There is an academic debate about the effects of blockchain technology on improving customer loyalty programs, especially in developing countries. However, some scholars have argued that this claim does not hinder the use of blockchain technology to improve customer loyalty programs and should benefit all companies worldwide. However, the efficiency of usage varies from company to company.

### 2.3 NFT in game

The game sector includes companies that build video games on-chain. Digital assets have existed in gaming for decades. Prominent examples of this are character skins within a video game, which apply to many popular games such as Fortnite, Counterstrike, and League of Legends. These skins alter the physical appearance of a player's in-game character or their in-game items. Players are willing to pay exorbitant amounts of money for skins for status. The more unique or scarce a skin is, the better and more valuable it is. In traditional gaming, the issue with this is that an in-game asset is simply data in the game regulated by the gaming company's centralized system. At will, a gaming company could ban or remove any player's account along with all of their in-game assets.

Implementing NFTs in games has revolutionized gaming asset ownership. For the first time in gaming history, with in-game characters and items as NFTs, in-game assets are unique, and players have full ownership and control over them. The idea of playing games to earn money is also not a new concept. The idea of earning fiat currency from playing video games has existed for many years. Even when there were no in-game mechanics to do so, there have always been ways to trade in-game assets or accounts for fiat currency. In many cases, these transactions occur on black markets because real-world trading often violates a game's terms of service. These markets still exist because people are always willing to pay to play. For example, PlayerAuctions is a gaming black market platform that allows players to trade in-game currency, items, skins, and accounts for hundreds of games [12].

It functions as a marketplace and escrow for these transactions because there is no in-game functionality to allow players to trade their assets amongst each other for real money. The implementation of blockchain technology in gaming has made the Play-To-Earn space more efficient and secure. Blockchain legalizes and encourages in-game currency and assets to be transferred between players who love playing the game and invested in by investors who see high potential returns in the newfound metaverse economies, or economies created by on-chain games. Blockchain technology provides elegant solutions to long-standing problems in the gaming industry [13].

Axie Infinity, an on-chain game (game built on the blockchain), utilizes NFTs and cryptocurrencies to make Play-To-Earn possible on the blockchain. The characters in the game function as NFTs and are collectible digital pets called Axies, which are like Pokemon and Cryptokitties. In order to play, users must purchase these NFTs in an Ethereum wallet and connect their Axie Infinity accounts to the wallets that hold the NFTs. Within the game, players assemble 3-Axie teams and progress through a story mode or battle against other players. Upon winning battles and completing in-game tasks, players are awarded in the in-game currency, Smooth Love Potion (SLP), which is also a cryptocurrency that trades on the market for fiat currencies. SLP can be used to breed more Axies, so players are willing to pay fiat currency to buy it from others who are earning it by playing the game then selling it for profit. On average, play-to-earn Axie Infinity players make nearly $500 per month by playing a few hours a day. This is a meaningful amount of supplemental income in third-world countries like the Philippines, where the game is most popular. Blockchain enables people to actually make a living by playing on-chain games like Axie Infinity [14].

## 3. THE INTEGRATED MODEL OF MOBILE GAME ITEM AND CUSTOMER LOYALTY MILEAGE IN NFT

Customer loyalty programs have spread throughout travel, retail, financial services and other economic sectors. The result is a cumbersome procedure for exchanging points between program partners, making the point system and usage options obsolete. For consumers who are interested in loyalty program arrays, blockchain technology can instantly exchange and exchange multiple loyalty point calls on a single platform [15]. Blockchain technology is revolutionizing a lot of things by moving money, clearing trades, making contracts smart, and enforcing terms, allowing companies to promote their brand, create stronger partnerships, and strengthen consumer loyalty. Blockchain can innovate loyalty by eliminating harassing fragmentation and extending the supported loyalty platform. If continued, all loyalty programs can be kept as a single umbrella, which can mean a high level of issuance and repayment and a high value to the end customer [16]. It can also help leverage customer preferences in real time and even enable —end-users to become the program operators. It offers new ways to generate revenues and new ways to engage customers in ways that had not been

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done before. However, blockchain program is intended to streamline loyalty and reward programs for the airlines, help promote access to cultural events, and eventually adjust the rewards program accordingly. If there is only one "wallet" for the point, the consumer does not have to find each program's options, restrictions, and usage rules. All loyalty programs are vulnerable to the blockchain revolution, but the travel industry is probably the most dangerous [17]. Travel loyalty programs tend to be complex and multi-currency, unlike banks that offer cash refunds or single currencies that are generally easy to use at retailers or merchants who run simple discount programs. In some cases, travel loyalty program points are different for travel components (flights, car rentals, hotels, meals), leading to defrag points. The estimates vary widely, but the typical "breakage" rate (percentage of unconstrained score) is about 10-20%. It can also be difficult for an average person to get enough points to get meaningful rewards. People have gained a lot of experience in technology that has successfully reduced inefficiency and friction in many industries. Large travel companies such as airlines and hotel chains pay billions of dollars annually to Priceline, Expedia and other online travel agencies, allowing customers to travel by air, hotel, and car rental. Loyalty platforms based on blockchain technology can bring another chaos.

Early adopters can get significant benefits. First, the blockchain technology can help alleviate the balance sheet liability that many people in the industry are facing [18]. Loyalty programs have long relied on affiliate cards and partnerships to sell points and generate incremental revenue. However, the number of airline seats and hotel rooms available for salvation in recent years has been limited by record personnel and load factors. As a result, new unused points have increased. The new accounting standard has become a headache. People must postpone the return for the value of their loyalty points until you redeem your miles. By adopting blockchain technology, companies can quickly add and maintain loyal partnerships without adding complexity to the program. A strong, frictionless partner network can mean more bonus options in addition to core travel products, which can create the valves you need for these growing balance sheet pressures. Second, using blockchain technology allows people to move away from the loyalty program mold of a tightly defined single-size program and the hassle-free restraint process [19]. Consumers increasingly expect personalized (simply non-segmented) travel products and digital one-stop services. The growth of online travel agencies is evidence for that part. With blockchain technology, people can seamlessly add both large and local partners, effectively eliminating the backend issues of providing trends and making trends much easier to meet. What will a loyalty network based on a blockchain look like? Initially, each loyalty program can develop its solution, but small loyalty programs can be grouped to compete effectively with larger customers over time. Ultimately it is expected to develop four to six blockchain-based loyalty networks fixed by major airlines, major hotel chains, or small travel company groups. Of course, introducing one or more blockchain platforms that incorporate multiple loyalty programs can present a number of risks. These platforms can add transaction layers between consumers and program operators and sellers, which can lower the cost per transaction that can grow over time, just like online travel agent fees. Customer data, the most valuable asset of a loyalty program, is available to other network participants, even competitors.

Therefore, in this study, we propose that network providers such as credit card processors and mobile businesses that make partial payments through items should form strategic partnerships based on NFTs for building and maintaining blockchain platforms. Figure 1 shows the process of this integration model.

① A customer purchases an item with a credit card in the store.
② Credit card companies allocate mileage to customers.
③ Customers use the mileage of their credit card to purchase NFTs of game items.
④ Customers use NFTs of game items in games or sell them on NFT exchanges.

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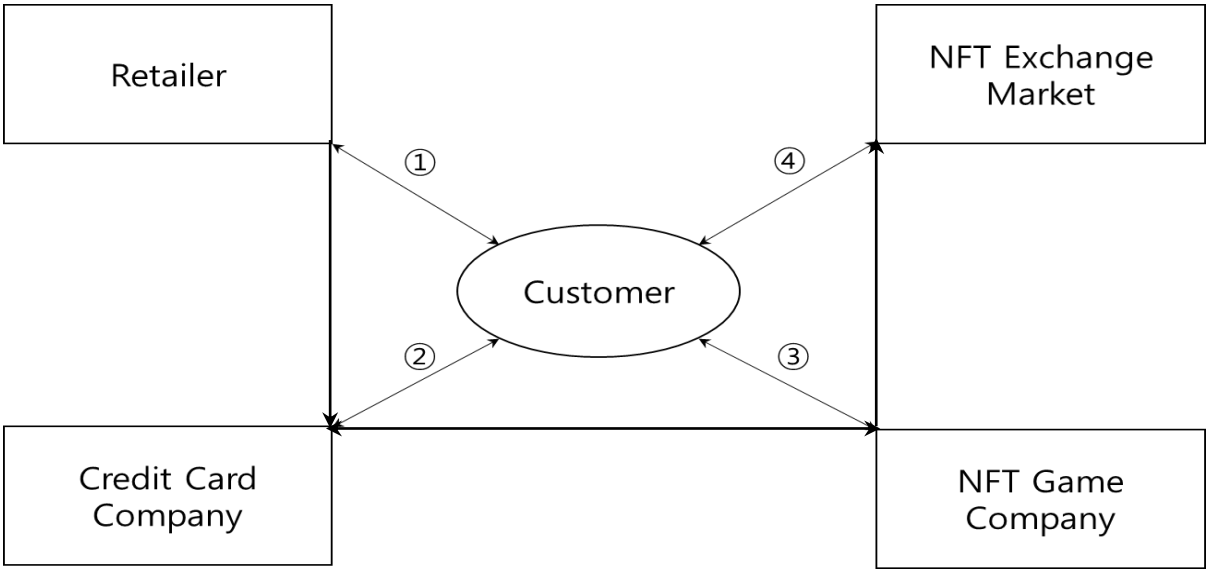


**Figure 1.** The process to use the integrated mobile game item and customer loyalty mileage in NFT

A customer purchases goods or services from a store. At this time, the customer pays with a credit card to which customer loyalty mileage is accumulated. The store provides the customer's payment information to the credit card company during the customer's payment process.

The credit card company allocates mileage to the customer according to the customer loyalty program based on the customer's payment information. The customer checks the game item NFT that can be purchased with the allocated mileage. To this end, game companies must link the system with credit card companies in advance to purchase game item NFTs with the mileage.

Customers purchase game items NFT with their mileage. The customer uses the purchased game item NFT in the game. The game company charges the credit card company to exchange the mileage paid by the customer to purchase the game item NFT for cash. The credit card company pays the game company cash corresponding to the mileage requested by the game company.

The customer fosters the game item NFT he purchased and sells it to the NFT exchange at a higher price. In exchange for selling their game item NFT, the customer receives coins or cash that can be converted into immediate cash.

In this study, as above, an integrated model for purchasing and selling NFT-based game items using credit card mileage was proposed. This model can activate the partial payment of game companies by purchasing game items with mileage acquired in payment for goods or services at offline retailers. In addition, by issuing game items as NFTs, game items can be used within the game, and by cultivating the game items and selling them at NFT exchanges at high prices to make them cash, P2E was made possible to generate profits through games.

## 4. CONCLUSION

Although many mobile games are being made around the world, there are currently many games that have a lifespan depending on the nature of the game. For increasing the lifespan of these games, games are constantly changing. However, the revenue model continues to stand still with partial fee-for-service. Therefore, it was found that the mileage system used in various fields such as internet shopping malls and airlines is good in attracting customers and increasing satisfaction through the thesis. Therefore, this study suggested a new revenue model using mileage to help extend the life of the game because it was thought that a revenue model that helps to increase the lifespan of the game is needed even for the revenue model of mobile games that are standing still. In particular, this study focused on the recent issue of game items as NFTs using blockchain technology.

The contents of this proposal looked at the partially paid service that generates the most revenue and provides the most services in the game industry from the mobile side through previous studies, and it was found that mobile is suitable for partial payment due to the development of the payment system. can In addition, the current mobile game industry is concerned about the lifespan of the game next to making a successful game, and it was said in the above that continuous updates are necessary to extend the lifespan of the

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game. However, a lot of attention was paid to the composition of the game, and the development of the partial payment model was stagnant. Many game producers saw it as a simple profit model.

We looked into the positive functions and effects of the mileage system presented in this study, and there were problems with the mileage service, but there were also many research results on how to solve the problems. Overall, there were many net functions, and the most problematic parts were 'Is there many places to use mileage?', 'Are there any inconvenience in using mileage? Considering the features and limitations of mobile, this study first made it possible to purchase game items with mileage, and secondly made it possible to safely trade the game items. If this proposal is applied, mobile games are also a loyalty program used in other places, and it is thought that it will help in the payment rate and user retention of paid model items.

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