

Addiction and Spending in Gacha Games

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Gacha games are the most dominant games on the mobile market. These are free-to-play games with a lottery-like system, where the user pays with in-game currency to enter a draw in order to obtain the character or item they want. If a player does not obtain what he hoped for, there is the option of paying with his own money for more draws, and this is the main way to monetize the Gacha game.

Gacha

addiction

lottery

1. Introduction

Gachapon is a name originally used by the Bandai company for marketing capsuled toys in their vending machines. The word *Gacha*/*gasha* and *pon* are onomatopoeic words that are used for two sounds made by Gacha: “Gacha”, turning the handle in the vending toys and “pon”, the sound of capsule as it falls out of the machine. Gachapons are still today used in Japan so that the users can be given small objects such as toys, which many people collect ^[1].

Gacha were introduced to the Japanese mobile game scene in 2011 and have since become an important part of the gaming industry. Gacha aspects in games have different mechanics and mostly have characters, cards and other items. In most modern Gacha games, Gacha is linked with events that are present for a limited time, and this creates in people the feeling of need and fear of missing out. The basic concept behind these games is simple: the player spends a certain amount of in-game money to “jump start” Gacha and afterward, obtains a random character or item. As some items or characters are less frequent than others, the players will have to spin the game several times before they obtain what they want ^[1].

Almost all Japanese games with highest-grossing profits use the Gacha system. In the last 5 years, they have become a world-wide known phenomenon. It has been evaluated that more than half of the income from these games comes from Gacha, which indicates that Gacha is the best way to whale hunt (an expression for a person who spends big amounts on Gacha games) ^[2].

Cygames is a company that offers games on the mobile social game platform Mobage. Some of the most popular games on the platform are THE iDOLM@STER Cinderella Girls: Starlight Stage, Rage of Bahamut, and Granblue Fantasy. At present, in addition to the Mobage platform, Cygames is present on Android/iOS platforms as well as PS4 and PC. As far as the Gacha aspect is concerned, Granblue Fantasy sometimes introduces a promotional coupon for a lottery where ten JPY 3000 (around HRK 175) Gacha draws are made, and a gift coupon is received

that can be exchanged for any character. The players who usually do not spend money are ready to pay in order to avoid a random draw and to make sure they obtain the character they want. During a promotional event in 2016, Granblue Fantasy added a limited-time character available only through the Gacha system. The terms “limited-time period” and “increase of probability” encourage many players to spend. One player won a character by spending JPY 700,000 (around HRK 41,000). According to the available statistics, the probability to win a character was much lower than the official announcement stated, which caused many complaints and much criticism. Cygames adopted a compensation of big proportions and set up the following Gacha system in Granblue Fantasy: for every draw, there is a currency called “Cerulean Sparks”. After the player obtains 300 Cerulean Sparks, those sparks can be exchanged for one character that can be won via a draw. After this fiasco, the CESA asked their members to follow the guidelines by showing the probability of draws in each banner. This had nothing to do with a law; it is just a rule that is today a part of every popular Gacha game ^[3].

2. Li and Nower

In 2019, Wen Li and Lia Nower conducted a study on the experiences of video game players with loot boxes, video gaming, and gambling. The survey investigated whether they spent money on loot boxes, whether loot boxes increased their gaming engagement, how often they played video games or gambled, and the duration of their video game or gambling sessions. The personal growth initiative scale (PGIS) was used for measuring the players’ gambling issues. The brief symptom inventory 18 (BSI-18) was used for the evaluation of players’ mental distress. The scientists searched for connections between buying loot boxes, video games, gambling, and mental distress. The effects of loot boxes were determined by comparing the answers of the video game players who bought loot boxes and those who did not.

It was discovered that nearly half of the sample (44%) spent money on loot box purchases, and 40% gambled online. Around 48% of the video game players who bought the loot boxes reported enhanced experiences of game playing as a result of purchasing loot boxes, while 18% reported that loot boxes worsened their gaming experience.

The game players who purchased the loot boxes played the video games more often and were more likely to play the game for seven or more hours per session. They also gambled online more often, and there was higher probability for them to gamble online for seven hours or more per session. The game players who bought loot boxes had serious issues with video games, and there was higher probability for them to meet the criteria for an Internet gaming disorder. They also had serious gambling issues. Problem video gaming and problem gambling were related to elevated mental distress. Therefore, the purchase of loot boxes was indirectly related to elevated psychological distress.

This study indicates that the purchase of loot boxes was related to problem gambling and problem video gaming. In order to minimize the damage from video gaming and gambling, the creators could take into consideration regulating certain loot box features. For example, they could ban buying loot boxes with real-world money. Regulations could be put in place to ban selling video games with loot boxes to individuals below a certain age limit ^[4].

3. Brooks and Clark

In 2019, Gabriel A. Brooks and Luke Clark conducted a similar study on the relationships between addiction and game gambling. Data were analyzed in order to determine to what extent adult video gamers used loot boxes, to what extent the use of loot boxes correlated to their gambling beliefs, problem gambling, and problematic online gaming, and to what extent market games influenced the usage of loot boxes. The examiners developed the risky loot box index (RLI).

Most participants (88.9% in Study 1 and 94.8% in Study 2) opened the loot box. About half of the participants (49.3% in Study 1 and 60.3% in Study 2) spent the money on a loot box. Most participants (75.7% in Study 1 and 79.3% in Study 2) agreed loot boxes felt like a form of gambling. Most participants (68.1% in Study 1 and 86.2% in Study 2) thought loot boxes were a form of gambling. There was a higher percentage of current gamblers (53.2%) among the participants in Study 1 than in Study 2 (15.5%).

The risky loot box index gamers in Study 1 reported serious problems with video games and gambling, as well as with higher gambling and luck-related erroneous beliefs. These results indicated that erroneous beliefs could be a factor for risky loot box usage. Similar relationships were found among gamers in Study 2, however, to a lower extent. The reason for that could be the fact that Study 2 had a smaller number of gamblers than Study 1.

Both studies showed much stronger connections with risk loot box usage than the typical measure of problem gaming. This suggests there had to be a difference between a problematic loot box use and problematic gambling. The problematic loot box use can be an effect of tendencies for risky behavior and erroneous beliefs on gambling.

Some gamers (27.8% in Study 1 and 39.7% in Study 2) reported sales of loot box items on Internet markets. Furthermore, those who preferred market games bought loot boxes more often so they could sell their content. This suggested that market games could lead to gambling behaviors and change a gamer's usage of loot boxes from wishing to buy items for personal reasons to wishing to make money ^[5].

4. Drummond and Sauer

This is in line with the study conducted in 2018 by Drummond and Sauer in which they wanted to determine if loot boxes constituted a form of gambling. The conclusion was that loot boxes shared important structural and psychological similarities to gambling, although each loot box game used in the study allowed for minor gamers to join it ^[6].

5. Lee and Kim

In 2016, Changho Lee and Ocktae Kim conducted a study for the Department of Mass Media Arts and Sciences at the National Youth Policy Institute in the Korean Sejong City. One of the main purposes of their study was to analyze the effect of online gaming on addiction by classifying it into PC online gaming and mobile gaming. This

study aimed to analyze the extent to which playing games after midnight affected addictive behavior. In addition, this study analyzed the impact of game genres, parental factors, the leisure environment, and relationship satisfaction on game addiction. About 1556 students living in five major Korean cities were sampled. Online game playing time was an important predictor of game addiction, especially among those who played PC online games late at night. Among the game genres, RPG, simulation, and casual games were positively associated with addictive behavior. While the game and the leisure environment had little effect on game addiction, the extent of satisfaction with relationships with parents, friends, and teachers had a significant influence. However, parental attachment and parental mediation did not impact game addiction.

Games are an important part of leisure time activities for young Koreans. According to the statistics, 57.7% of young people enjoy watching television and DVDs at the weekends and during holidays, 41.9% play computer games, and only 17.9% engage in some type of cultural or art activities, and 14.5% actively play sports.

Various factors related to the addiction of online games in a smart mobile-phone saturated media environment were examined. Online game addicts were 11.4% of the participants in total. Their findings were similar to the addiction rate found in different Asian studies: 15.7% among adolescents in Hong Kong and between 8.8% and 9.9% among adolescents in Singapore. However, a superficial comparison of these results is not very beneficial due to the different scales used for measuring game addictions. If the demographic variables are considered, gender is strongly linked to game addiction. It is clear that male students are much more dependent on online games than female students. However, the number of female students who enjoy playing mobile games is increasingly growing. According to a study published by the National Youth Policy Institute in Korea, 41.7% of male participants enjoyed playing mobile games for more than 5 days per week in comparison to 33.2% of female participants. Having in mind the expansion and development of mobile games, it is becoming more and more likely that female students will also become addicted to mobile games. Online game playing time was an important predictor of game addiction, which supports the above-mentioned results of the study. It is interesting that the effect of PC online game playing time on addiction was more significant than the effect mobile gaming had on addiction. Although mobile games are also becoming more popular among adolescents, they seem to have a lower degree of addiction than the PC online games. However, with the development of technology, an increasing number of users will enjoy playing MMORPG on mobile platforms in the near future. This will probably increase the addiction of adolescents to mobile games, and, in turn, it will enhance their addiction.

The students who played PC online games late at night showed a higher tendency for game addiction. Therefore, it can be concluded that limiting adolescents' access to PC online games after midnight is very important in preventing game addiction. However, this result does not mean the system of forced shutting down should be encouraged by blocking access to online games for young gamers. Although the Korean government does not allow high school students to use online games after midnight, some students manage to do it anyway. It is likely they have access to online games by using other people's ID cards. This policy was criticized by many young people. It is necessary to have a higher degree of parental interest in children's gaming after midnight and more guidance. Parents need to supervise their children's habits and patterns discretely, as parental supervisions surely contributes to decreasing game addiction. Addicted adolescents can play games late at night. Therefore, the

above-mentioned findings need to be interpreted carefully. Among the game genres, RPG, simulation, and casual games significantly increased the probability of addiction. However, the effect of these variables was not as strong.

It is interesting to note there was a significant gender difference related to the increased probability of addiction. The male students who liked simulation and casual games were at risk of developing addiction, while the female students who liked RPG and shooting were at a greater risk of addiction. One possible explanation for this result is that female students played RPG games in order to socialize with other gamers and for fun to a greater extent than the male students did. Therefore, they tended to be more addicted to RPG games. Although casual games were popular among female students, they increased the risk of addiction among male students. This result also indicated that men are becoming more and more trapped in simple games that do not require much time to play. As occasional gaming increases with the expansion of smartphones, male students are likely to be at a greater risk of becoming addicted to mobile gaming. This significant gender gap requires more detailed analysis in the future.

As opposed to many of the above-mentioned studies, this one found that parental attachment did not have a significant impact on gaming addiction. Parental mediation did not play a role in reducing gaming addiction. This result suggests that parental influence on gaming addiction among young people in Korean society is minimal. As already mentioned above, most participants stated their parents had no interest in their online gaming. The factors that increased the risk of online addiction at home were a lack of parental interest in their children's online activities and a lack of willingness to control their time spent online [7].

| 6. Wang J. L., Sheng, and Wang H. Z.

In 2019, Jin-Liang Wang, Jia-Rong Sheng, and Hai-Zhen Wang conducted a study on the relationship between mobile game addiction and depression, social anxiety, and loneliness. The potential role of gender difference in the obtained results was also examined. The results revealed that adolescents with mobile game addiction had higher depression, social anxiety, and loneliness, which confirmed their three hypotheses regarding the association between mobile game addiction and depression, social anxiety, and loneliness. Further, a gender difference was observed between mobile game addiction and social anxiety, where a stronger connection between mobile game addiction and social anxiety could be seen in male adolescents. This indicates that male adolescents may experience more social anxieties if they use mobile game addictively compared with female adolescents. The literature has also shown that Internet addictions are related to poorer emotional health, in particular depression and anxiety. Adolescents with high Internet use exhibited more psychopathology, as revealed by the brief symptoms inventory (BSI, a reduced version of the symptoms checklist, SCL-90) compared with those with low Internet use. In a recent study, it was reported that young adults addicted to video games showed increased depression and anxiety and felt more socially isolated. The link between mobile game addiction and mental health may be a consequence of the social isolation resulting from spending too much time gaming, which, in turn, leads to undermined psychological well-being [8].

| 7. Chamarro, Oberst, Cladellas, and Fuster

In 2020, Andrés Chamarro, Ursula Oberst, Ramón Cladellas, and Héctor Fuster conducted a study with the aim of investigating the impact of psychological need frustration on mobile video gamers' addictive behavior, as well as the role of cognitions (game-use expectancies) and behaviors (time spent playing) through a hypothetical serial mediation model, while controlling important correlates, such as game genre, age, gender, and payment during play. A total of 471 mobile game users (211 males) with an average age of 21 replied to an online survey containing sociodemographic and game variables, the need satisfaction and frustration scale (NSFS), the Internet gaming disorder scale—short form (IGDS9-SF), and a slightly modified version of the Internet use expectancies scale (IUES). The results corroborate the negative effects of need frustration on IGD among mobile gamers and clarify the role of time spent playing and game-use expectancies in the development of IGD, highlighting the important role of cognitions in this relationship. The conclusion is that both the time spent playing and game-use expectancies should be important targets for clinical interventions, even though they are not included in the diagnostic criteria ^[9].

8. Zendle and Cairns

In 2019, David Zendle and Paul Cairns conducted a study on loot box spending. Loot box spending was measured by asking the participants to state approximately how much money they spent on loot boxes in the previous month. In order to blind the participants about the aims of the study, they were asked a number of questions on their spending habits: how much money they spent on physical copies of video games; how much money they spent on virtual copies of video games; and how much money they spent on in-game items.

Problem gambling was measured using the problem gambling severity index (PGSI). The results of this study found further evidence for a potentially strong link between problem gambling and spending on loot boxes. Overall, there was a significant link between the participants results on the problem gambling severity index and their spending on loot boxes. Individuals who had no gambling problems spent significantly less money on loot boxes than those who were problem gamblers or those at risk of problem gambling.

The subgroup analyses revealed that gamblers had no problem spending significantly less money per month on loot boxes (average = USD 11.14) than any low-risk gamblers (average = USD 21.87), moderate-risk gamblers (average = USD 27.55), or problem gamblers (average = USD 38.24). This study found further evidence for a potentially strong link between problem gambling and the amount individuals spend on loot boxes. It directly addressed the limitations of previous studies in which a similar relationship was seen in an unblinded and self-selected sample.

This study replicated this relationship by suggesting that this relationship existed even when the sample was blinded to the fact that the study relates to loot boxes and gambling and that they did not choose themselves to be a part of a study related to loot boxes. However, it is crucial to note that the causal direction of this relationship is unclear. It is possible for loot boxes to cause individuals to become problem gamblers. Similarly, existing problem gambling might cause individuals to spend more money on buying loot boxes.

In that case, the presence of loot boxes in video games would not create a “ripe breeding ground” for problem gambling. Instead, loot boxes would give gaming companies the opportunity to take advantage of serious pre-existing psychological problems among their customers to make a substantial financial profit. Due to the correlational nature of this research, it is impossible to tease apart which of these directions of causality are true.

However, regardless of which of these outcomes is the case, the gaming industry is facing a crisis of conscience. Rating agencies such as the ESRB and PEGI are having a hard time arguing in good faith that there is little evidence of a link between problematic gambling and the use of loot boxes. Loot boxes are a new phenomenon, and game developers are understandably cautious of linking their products to gambling. However, in this case, “the focus of all the parties, whether governments, industry or consumers, should be on the need for self-education and due diligence in understanding the complexity and nuances of games and gambling”. Researchers firmly believe that this includes the need to constantly think about the potential effects of loot boxes on behalf of industry stakeholders ^[10].

9. Kim

In the study from 2016, Soul Kim analyzed the psychology of users who do not pay for the Gacha system from a multilevel perspective. For this reason, this study mainly focused on the Puzzle & Dragon mobile game, which has made the highest profit in the history of mobile games thanks to its Gacha system of collecting characters, which enables users to enjoy the game free of charge without needing to pay. This study analyzes the condition and psychological mechanism of users who pay for the Gacha system.

First, the users show cognitive error applicable to a reactional psychology and probability game in which the user pays to enjoy the moment the lottery starts. More precisely, the costs are generated through errors in self-rationalization, errors in operational conditioning, errors in sunk costs, errors in probability perception, and errors in chance. Second, users show a psychological reaction to scarcity. More precisely, after the user receives a limited-time message, the user appreciates the value of the product, which increases their desire to own their own unique character; the user pays to avoid the uncomfortable feeling of the restriction that something cannot be bought. Third, users pay for personal satisfaction. In particular, users are charged based on their desire to collect and strengthen a sense of superiority in the game, as well as to release a sense of defeat and relative deprivation if a particular character cannot be acquired.

Users who have invested a lot of money in the game may regret being impulsively charged for their cognitive error and their feeling of inferiority once they have completed the draw. However, by continuously providing in-game entertainment that can compensate for such negative and skeptical emotions while presenting different uses for unwanted lottery-acquired characters, F&D is a mobile game that remains popular. It was determined that the psychological analysis of users who pay for the Gacha game system presented in this study was assessed as valid basic academic data for accessing the psychology of users who consume virtual currency in mobile games ^[11].

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