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Gacha Addiction and In-App Purchases: A Study on Genshin Impact Players in Indonesia

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ABSTRACT

The purpose of this study was to examine the impact of gacha addiction and good price on the intention to purchase in-app items, with mobile game loyalty as a mediating variable. The research employed a quantitative approach using Partial Least Squares-Structural Equation Modeling (PLS-SEM) to analyze survey data collected from 208 Genshin Impact players in Indonesia through random sampling and online questionnaires. The results indicate that gacha addiction significantly influences the intention to purchase in-app items, while good price has a moderate effect. Additionally, mobile game loyalty serves as a partial mediator in the relationship between gacha addiction and purchase intention.

Keyword: Gacha Addiction; Genshin Impact; Good price; In-App Purchase Intention; Indonesia; Mobile game loyalty; PLS-SEM.

INTRODUCTION

Addictive behaviors have often been correlated with substance abuse, alcohol, gambling, gaming, and more. Companies can exploit their consumers' addictions to certain goods or activities to quickly gather profits without concern for their consumers' health or financial situation. This exploitation is why such activities are often regulated or restricted for consumer health and longevity. This study aims to discuss an addictive feature that has been regulated yet popularized as a monetization tool within the gaming industry: the gacha feature. The gacha feature allows players to obtain certain goods randomly within fixed odds; some players may need to spend extra money to acquire specific items, while others may spend less. Gacha is a new addictive in-app feature because it incorporates gambling aspects.

The gacha feature began to be widely used in the early 2010s, especially in Japan. Nearly all of Japan's highest-grossing mobile games use the gacha feature, making it an integral part of Japanese mobile gaming culture. Mobile game developers praise the gacha feature as a monetization strategy for free-to-play apps, aiming to maximize the game's monetization potential. The first gacha feature was implemented on December 3, 2003, in the game Maple Story (Katsuta, 2007), intending to create a free-to-play mobile game that anyone could play, with an option to buy in-app features using real currency to acquire virtual goods

randomly. The mobile game industry grew rapidly between 2008-2011 due to the popularization of gacha features (Ernkvist, 2016). However, the feature became problematic in 2012 as it caused consumers to become very addicted and spend money uncontrollably, even in free-to-play games. This issue led the Japanese Online Game Association and the Computer Entertainment Supplier's Association (CESA) to issue regulations on the feature in 2016, providing players with a guarantee system to acquire desired in-app features within a fixed number of pulls (Koeder et al., 2018; Ma & He, 2025).

In-app purchases require long-term momentum to motivate players to engage. The more involvement and attachment players have with the game, the greater their intention to purchase (Drell, 2013; Catalán et al., 2019; Hwang et al., 2025). Gacha, as an in-app feature, has elements similar to gambling, using in-app currency to obtain virtual items randomly. This may lead to an addictive mindset, such as "I might get what I want if I try again," increasing the tendency for players to spend money to obtain what they desire. Long-term addictive behaviors may heighten the intention to purchase in-app items (Balakrishnan & Griffiths, 2018; Kubat Dokumacı, 2024). Addictive behaviors can enhance player loyalty, aligning with previous research by Balakrishnan & Griffiths (2018). Affordable prices of goods can be a determining factor for purchasing goods in mobile games (Cheng et al., 2008). Although previous studies have discussed addiction in online games (Cole & Griffiths, 2007; Kuss & Griffiths, 2012; Widodo & Balqiah, 2020), internet addiction (Lu & Wang, 2008; Barnes & Pressey, 2014), and mobile phone addiction (Kim & Shin, 2016; Makki et al., 2025), there has been limited discussion on addiction within the context of gacha in-app features influencing players' in-app purchase intentions. This study aims to fill this research gap by determining whether gacha addiction influences players' in-app purchase intentions as much as or more than the affordability of in-app goods.

The growth of the gaming industry has spread extensively, particularly in Indonesia, which ranks third globally in the number of gamers, constituting 94.45% of the population aged 16-64 years (Dihni, 2022). Studies on gacha addiction in Indonesia have focused on the psychological aspects, showing that gacha fosters a sense of attachment, leading players to feel a connection with the game and potentially perpetuating continuous purchases (Pradhipta, 2021). Gacha is also considered an indirect form of gambling, fueling consumptive behavior among its users (Ardiansyah & Wahyu, 2024). However, most research on gacha addiction relies on qualitative methods through literature reviews, lacking empirical testing of its statistical impact. Therefore, this study aims to address this gap by empirically examining the influence of mobile gaming, particularly gacha features, which exhibit gambling-like tendencies.

This study enhances the theoretical comprehension of gacha mechanics in mobile games by presenting gacha addiction as a prominent catalyst for in-app purchases. This study expands upon current research on digital consumption and gambling-like behaviors in virtual settings by incorporating ideas from addiction theory and consumer behavior. The study presents a thorough behavioral model that investigates the effects of gacha addiction on purchase intentions. Additionally, it studies how perceived value (good pricing) moderates this effect and how mobile game loyalty mediates it. This comprehensive approach enhances comprehension of the intricate relationships among various variables.

This research concentrates explicitly on gacha addiction as the main catalyst, distinguishing itself from other studies that have explored different aspects affecting in-app purchases. This original study examines a developing trend in mobile gaming, offering fresh

perspectives on its psychological foundations and commercial consequences. Introducing perceived value as a moderating variable and mobile game loyalty as a mediating variable brings a unique combination to the analysis. This comprehensive method enhances the comprehension of gacha addiction and clarifies the intricate interaction among various motivational elements. The study focuses on Genshin Impact players in Indonesia, providing unique insights that emphasize the distinct characteristics of mobile gaming in the Southeast Asian industry.

This study examines the relationship between gacha addiction, in-game item pricing, mobile game loyalty, and in-app purchase intentions. To achieve this goal, a thorough review of the relevant literature on addiction was conducted, exploring its relevance to gacha behavior in in-app purchases. Data was collected from players of Genshin Impact, a popular game incorporating gacha elements, to measure their levels of gacha addiction, their opinions on in-game prices, their loyalty to the game, and their purchase intentions for gacha. The collected data was then analyzed using Partial Least Squares-Structural Equation Modeling (PLS-SEM) to investigate the roles played by gacha addiction and opinions on in-game prices in shaping purchase intentions. By employing this approach, we aimed to gain insights into the factors that influence players' gacha addiction and how these factors impact their in-app purchase intentions.

METHODS

Table 1. Factors Analysis and Reliability Tests

Variable	Dimensions	Factor loadings	α
Gacha Addiction (GA)	Salience	0,659	
	Tolerance	0,614	
	Mood Modification	0,648	
	Relapse	0,653	0,707
	Withdrawal Symptoms	0,603	
	Conflict	0,621	
	Problems	0,713	
Good Price (GP)	GP1	0,794	
	GP2	0,800	
	GP3	0,766	0,832
	GP4	0,790	
	GP5	0,740	
Mobile Game Loyalty (L)	L1	0,643	
	L2	0,670	
	L3	0,668	0,730
	L4	0,610	
	L5	0,609	
In-App Purchase Intention (PI)	PI1	0,612	
	PI2	0,636	
	PI3	0,676	0,716
	PI4	0,684	
	PI5	0,619	

Source: Data processed by the authors (2024).

A quantitative method was employed in this study, utilizing data collected via questionnaires distributed through Google Forms. The study employed a random sampling

technique to gather responses from Indonesian players of multiple gacha-based games, including Genshin Impact, Arknights, and Fate/Grand Order. By expanding the sample beyond a single game, the study aimed to provide a more comprehensive understanding of whether the observed behaviors are unique to Genshin Impact or reflective of broader gaming trends. This approach enhances the generalizability of the findings and strengthens the study's contribution to research on gacha addiction and in-app purchasing behaviors. To facilitate respondent participation, the researcher organized two "Blessing of the Welkin Moon" prize distribution events. "Blessing of the Welkin Moon" is an in-app feature that players can subscribe to monthly, offering higher value compared to other in-game purchases. The study collected data from 208 Indonesian Genshin Impact players. An initial pilot test assessed the questionnaire's validity. After evaluating the outcomes of the pilot test conducted on these participants, the questionnaires were subsequently disseminated to a selected set of target samples. Confirmatory factor analysis was employed to establish the questionnaire's construct validity, and the results confirmed its validity. This study employs Cronbach's Alpha coefficient to assess the questionnaire's reliability. Table 1 displays the confirmatory factor analysis findings and the variables' reliability.

Gacha addiction was assessed based on seven dimensions with 19 indicators, referring to studies by Balakrishnan & Griffiths (2018), Xu et al. (2012), and Lee et al. (2021). The first dimension, salience, measured the level of addiction and spending habits in gacha. The second dimension, tolerance, evaluated an individual’s inability to control addictive behavior, increased spending, and difficulty in stopping. The third dimension, mood modification, assessed the extent to which gacha was used to relieve stress, enhance pleasure, and distract from problems. The fourth dimension, withdrawal symptoms, reflected challenges in reducing spending, resistance to advice from others, and personal difficulties in controlling expenditures. The fifth dimension, relapse, measured feelings of discomfort, anger, and stress when attempting to stop. The sixth dimension, conflict, included disputes arising from spending habits, dishonesty regarding expenditures, and neglect of others. Finally, the problems dimension assessed the impact of addiction on important responsibilities and financial strain due to excessive spending.

In addition, mobile game loyalty was evaluated using five indicators: the desire to continue playing, preference for the game over others, positive word-of-mouth, inclination to recommend it to others, and inviting others to play. These indicators were based on the research of Balakrishnan & Griffiths (2018), Hsiao & Chen (2016), and Huang & Hsieh (2011).

Furthermore, perceived value in gacha transactions was assessed using five indicators: reasonable pricing, cost-effectiveness, benefits matching the price, meeting expectations, and affordability. These indicators were derived from studies by Hsiao & Chen (2016), Purnami & Agus (2020), and Hamari et al. (2020).

Meanwhile, purchase intentions were measured using five indicators: interest in buying, predicting future purchases, recommending purchases to others, perceived usefulness of purchases, and intention to make repeat purchases. This measurement was based on the research of Balakrishnan & Griffiths (2018), Hsiao & Chen (2016), and Hsu & Lin (2016). All variables in this study were measured using a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

RESULT AND DISCUSSION

The respondents consisted of 173 (83.7%) male and 34 (16.3%) female participants, reflecting a predominantly male sample. The majority (83.2%) were between 18 and 25 years old, indicating that the study primarily captured insights from young adults. In terms of financial status, 84 respondents (40.4%) reported having no income, suggesting that a substantial proportion of participants rely on external sources, such as allowances or financial support from family, to fund their gaming expenses. The most common spending group among respondents was the "dolphin" category, which included 124 respondents (59.6%). Dolphins are players who tend to invest in high-value subscription-based features and make moderate in-app purchases, with monthly expenditures ranging between IDR 79,000 and IDR 329,000. This finding highlights that a significant portion of Genshin Impact players in this study, despite not having their own income, are still willing to spend money on in-game items, suggesting strong engagement with the game's monetization system. The prevalence of dolphin spenders also underscores the effectiveness of subscription models and microtransactions in sustaining revenue from a dedicated player base.

All variables met the requirements for convergent validity, as each achieved an Average Variance Extracted (AVE) score above 0.50, indicating that more than half of the variance in their observed indicators is explained by the underlying construct (Hair et al., 2011).

Table 2. Convergent Validity Test Results

Variable/Dimensions	AVE
Gacha Addiction	0,558
Salience	0,677
Tolerance	0,659
Mood Modification	0,717
Relapse	0,725
Withdrawal Symptoms	0,772
Conflict	0,628
Problems	0,733
Mobile Game Loyalty	0,653
Good Price	0,707
In-App Purchase Intention	0,633

Source: Data processed by the authors (2024).

The discriminant validity analysis confirmed that all variables passed the test, as evidenced by their Heterotrait-Monotrait Ratio (HTMT) values being below the recommended threshold of 0.9 (Henseler et al., 2015). This indicates that each construct is sufficiently distinct from others, ensuring that the measurement model does not suffer from excessive overlap between variables.

Table 3. Discriminant Validity Test Results

Variable	GP	GA	L
GA	0,266		
L	0,282	0,194	
PI	0,553	0,649	0,399

Source: Data processed by the authors (2024).

GA: Gacha addiction; L: Mobile game loyalty; GP: Good price; PI: In-app purchase intention.

The indicator reliability analysis demonstrated that each indicator successfully met the required threshold, as all factor loadings exceeded the recommended value of 0.6 (Table 4). This result indicates that each measurement item consistently represents its corresponding construct, thereby confirming the reliability of the variables used in this study (Hair et al., 2011).

Table 4. Indicator Reliability Test Results

Variable	Dimensions	Factor Loading
Gacha Addiction (GA)	Salience – GA1	0,817
	Salience – GA2	0,829
	Tolerance – GA3	0,819
	Tolerance – GA4	0,847
	Tolerance – GA5	0,767
	Mood Modification – GA6	0,838
	Mood Modification – GA7	0,823
	Mood Modification – GA8	0,878
	Relapse – GA9	0,824
	Relapse – GA10	0,820
	Relapse – GA11	0,908
	Withdrawal Symptoms – GA12	0,833
	Withdrawal Symptoms – GA13	0,894
	Withdrawal Symptoms – GA14	0,907
	Conflict – GA15	0,845
	Conflict – GA16	0,724
	Conflict – GA17	0,804
	Problems – GA18	0,849
	Problems – GA19	0,862
Good Price (GP)	GP1	0,848
	GP2	0,835
	GP3	0,835
	GP4	0,891
	GP5	0,792
Mobile Game Loyalty (L)	L1	0,702
	L2	0,742
	L3	0,845
	L4	0,885
	L5	0,850
In-App Purchase Intention (PI)	PI1	0,849
	PI2	0,803
	PI3	0,644
	PI4	0,808
	PI5	0,855

Source: Data processed by the authors (2024).

The internal consistency reliability analysis further demonstrated that all variables were reliable, as each variable had a composite reliability value between 0.7 and 0.95 (Hair et al., 2019; Table 5).

Table 5. Internal Consistency Reliability Test Results

Variable/Dimensions	Composite Reliability
Gacha Addiction	0.925
Salience	0.807
Tolerance	0.852
Mood Modification	0.884
Relapse	0.888
Withdrawal Symptoms	0.910
Conflict	0.835
Problems	0.846
Mobile Game Loyalty	0.903
Good Price	0.923
In-App Purchase Intention	0.895

Source: Data processed by the authors (2024).

Additionally, the multicollinearity test results, based on the variance inflation factor (VIF), indicated that no multicollinearity was present, as all values were below 5 (Hair et al., 2019; Table 6).

Table 6. Multicollinearity Test Results

Variable	VIF	Explanation
PI = f (GA, L, GP)		
GA	1.070	No Multicollinearity
L	1.085	No Multicollinearity
GP	1.120	No Multicollinearity

Source: Data processed by the authors (2024).
GA: Gacha addiction; L: Mobile game loyalty; GP: Good price;
PI: In-app purchase intention

The coefficient of determination test results suggest that the model has a moderate ability to explain in-app purchase intention, with values between 0.5 and 0.75, and a very low ability to explain mobile game loyalty, as the value was below 0.25 (Hair et al., 2019; Table 6). Furthermore, the prediction relevance test results (Table 7) confirmed the model's suitability for measuring the conceptual framework, as indicated by a Q^2 value greater than 0 (Hair et al., 2011).

Table 7. Coefficient of Determination and Predictive Relevance Test Results

Variable	R^2	Q^2
In-App Purchase Intention	0,502	0,302
Mobile Game Loyalty	0,025	0,013

Source: Data processed by the authors (2024).

The hypothesis testing results (Table 8) shows that all hypotheses are supported because they met the requirements, namely the p-value is below 0.5 which means that the H_1, H_2, H_3, H_4 hypothesis were supported. In the mediation test, H_5 acts as a partial mediation

because gacha addiction can affect the intention to buy in-app goods with or without the mediation.

Table 8. Hypothesis Test Results

	Hypothesis	β	p-value	f^2
H_1	Gacha Addiction → Mobile Game Loyalty	0,157	0,004	0,025
H_2	Gacha Addiction → In-App Purchase Intention	0,461	0,000	0,398
H_3	Mobile Game Loyalty → In-App Purchase Intention	0,198	0,000	0,072
H_4	Good Price → In-App Purchase Intention	0,337	0,000	0,204
H_5	Gacha Addiction → Mobile Game Loyalty → In-App Purchase Intention	0,031	0,018	-

Source: Data processed by the authors (2024).

Based on the first hypothesis test (H_1), gacha addiction shows a statistically significant positive effect, albeit with a small impact, on mobile game loyalty. This aligns with previous research showing that prolonged engagement in addictive gaming activities can contribute to loyalty (Balakrishnan & Griffiths, 2018; Lu & Wang, 2008; Kim & Shin, 2016). In this study, the small impact of gacha addiction on loyalty may be due to varying levels of player satisfaction, influenced by the unpredictable nature of gacha rewards.

According to the second hypothesis test (H_2), gacha addiction demonstrates a statistically significant positive effect, with a substantial impact, on in-app purchase intention. This finding is consistent with prior studies, which suggest that deeper engagement in online games increases the likelihood of purchasing in-app features (Balakrishnan & Griffiths, 2018; Barnes & Pressey, 2014; Widodo & Balqiah, 2020). Gacha addiction stems from players' desire to obtain rare in-game items, which functions similarly to gambling mechanics and fosters compulsive purchasing behavior. This result underscores gacha addiction as a major revenue driver, particularly in Genshin Impact.

Based on the third hypothesis test (H_3), mobile game loyalty shows a statistically significant positive effect, albeit with a minor impact, on in-app purchase intention. This aligns with previous research suggesting that loyalty influences consumer purchase decisions (Oliver, 1999; Balakrishnan & Griffiths, 2018; Purnami & Agus, 2020; Widodo & Balqiah, 2020). In this study, although Genshin Impact players exhibit loyalty to the game, this loyalty has only a small impact on their purchasing behavior. Many Indonesian players perceive in-app purchases as unnecessary expenses, which may explain the weak correlation.

Based on the fourth hypothesis test (H_4), the perceived value of in-app purchases exhibits a statistically significant positive effect, with a moderate impact, on in-app purchase intention. This finding supports previous studies indicating that pricing affects players' willingness to make in-game purchases (Hamari et al., 2017; Cheng et al., 2008; Purnami & Agus, 2020; Widodo & Balqiah, 2020; Hsiao & Chen, 2016). Although Genshin Impact's in-app pricing is generally viewed as reasonable, many players feel dissatisfied with the value they receive, leading them to discourage others from making purchases. However, despite these reservations, some players remain open to future spending.

Finally, according to the fifth hypothesis test (H_5), gacha addiction exhibits a statistically significant positive effect on in-app purchase intention through the mediating role of mobile game loyalty. Mediation analysis shows that mobile game loyalty partially mediates the relationship between gacha addiction and in-app purchase intention. This suggests that even when players do not yet feel loyal to the game, gacha addiction strongly influences their propensity to purchase in-app items.

This study provides new insights into how gacha addiction influences in-app purchase intentions among Indonesian gamers. It specifically examines gacha mechanics—a form of randomized rewards in games like Genshin Impact—and their impact on player spending behavior. By quantitatively analyzing the relationships between gacha addiction, mobile game loyalty, and purchase intention, this research fills a important gap in understanding consumer behavior in the gaming industry.

Given Indonesia's growing mobile gaming market, these findings highlight the importance of ethical game monetization strategies. The results suggest that gacha addiction not only directly influences in-game spending but also indirectly affects spending through its impact on player loyalty. This dual effect underscores the need for developers to balance profitability with ethical considerations in game design.

From a practical perspective, this study offers valuable insights for game developers, policymakers, and researchers interested in regulating addictive features in digital entertainment. It also provides actionable recommendations for game creators and marketers aiming to optimize their monetization strategies. Understanding the impact of gacha addiction and the perceived value of in-app purchases can help design more engaging and sustainable in-game economies. Furthermore, recognizing the mediating role of game loyalty suggests that fostering long-term player engagement is a key factor in maintaining financial success in the gaming industry.

In essence, this research enhances our understanding of addictive behaviors in gaming, particularly in the context of gacha mechanics, and provides practical implications for stakeholders seeking to manage and regulate consumer spending in online gaming environments. The findings offer valuable insights for game developers and marketers looking to optimize their monetization strategies. Understanding the significant role of gacha addiction and perceived value in driving purchases can help shape more engaging and profitable in-app purchasing systems. Furthermore, recognizing the mediating role of game loyalty highlights the importance of fostering long-term player engagement.

CONCLUSIONS

Based on this study, gacha addiction has a positive effect on mobile game loyalty and in-app purchase intention, mobile game loyalty has a positive effect towards in-app purchase intention, good price has a positive effect towards in-app purchase intention, and gacha addiction has a positive effect on in-app purchase intention through mobile game loyalty. This research shows that even if gacha players have yet to feel loyal towards the mobile game, gacha addiction is already a strong enough factor that can influence players to buy in-app items.

The limitations of this study lie in the variables used to examine in-app purchase intention and mobile game loyalty. This research specifically focuses on the role of addiction in relation to these two variables within the context of the gacha feature and pricing. Future research is encouraged to incorporate additional variables such as perceived playfulness, player satisfaction, perceived connectedness to virtual features, and perceived rewards to further explore their impact on mobile game loyalty and in-app purchase intention. This is necessary because in-app purchase intention is influenced by multiple factors, as each in-app item holds different value, and players' perceptions of these items vary significantly.

Future studies may also focus on the characteristics of respondents, particularly by selecting participants aged 25 and above to examine the relationship between impulsivity and gacha addiction. This would allow researchers to assess whether these characteristics support the theories proposed by Gavin et al. (2009) and Steinberg et al. (2008). Additionally, expenditure groups could be analyzed, particularly those classified as "whales" and "leviathans," to better understand their level of gacha addiction and their motivations for spending money on in-app purchases. The whale expenditure group consists of players who spend between IDR 330,000 and IDR 10,000,000 per month, while leviathan spenders exceed IDR 10,000,000 per month.

For mobile game developers, it is suggested to use the gacha feature responsibly. While the addictive nature of gacha mechanics can generate substantial revenue, potentially even more than maintaining reasonable pricing, it should be implemented ethically. Exploiting players' addiction can have long-term negative consequences for both the players and the developers. For instance, introducing essential items exclusively through gacha may initially drive high spending, but over time, excessive monetization can lead to player dissatisfaction, reduced engagement, and ultimately, the game's discontinuation.

A relevant example is Brave Frontier, a mobile game developed by Alim, which ceased operations on April 27, 2022, after nine years of service (Toffee, 2022). Originally released in Japan in July 2013 and globally in December 2013, Brave Frontier was notorious for releasing overpowered gacha characters, making it nearly impossible to complete certain content without acquiring specific units. This created a high barrier to entry for new players while also leading to stagnation among veteran players. As the active player base steadily declined, overall revenue decreased, ultimately resulting in the game's shutdown.

Finally, players are advised to exercise caution and avoid excessive spending on gacha mechanics. Uncontrolled in-app purchases can have negative financial and personal consequences. Several extreme cases have been reported, such as a Singaporean child accumulating S$20,000 SGD in gacha-related charges on their parents' mobile bill and an undergraduate student depleting their bank account on gacha pulls, forcing them to borrow money from their boyfriend just to afford food (Yeoh & Yip, 2022). Players should take heed of concerns raised by family and friends if their spending on gacha games exceeds reasonable limits. Additionally, they should practice self-restraint when making in-game purchases, as missed promotions or rare items will likely return in future events.

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