

EXPLORING VIRTUAL CONSUMPTION: THE ROLE OF GAME ADDICTION, EDUCATION, AND INCOME IN ONLINE GAME PURCHASE INTENTION

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ABSTRACT

The online gaming industry in Indonesia has grown rapidly during the COVID-19 pandemic due to the government's policy of staying at home (lockdown), which ultimately encouraged people to play online mobile games, leading to an increase in the number of players and in-game item purchases. This phenomenon has impacts, such as gaming disorder, which increases purchase intentions and can disrupt social and economic balance, especially in Indonesia, where the income level is only 0.5%. This study was conducted in Surabaya, one of Indonesia's major cities, to determine purchase intentions for online mobile games. The purpose of this study was to investigate the impact of game addiction on purchase intentions in mobile games (PUBG, MLBB, and FF), with education and income serving as moderating variables. This study involved mobile game players aged 17 years or older who had purchased items in online games (PUBG, MLBB, and/or FF) at least once in the past year. The study sample consisted of 273 respondents, distributed online using a Google Form questionnaire. PLS-SEM and SPSS methods were used to analyze the data. This study shows that game addiction influences purchase intentions, while education and income do not moderate these effects. These results indicate that education level and income do not influence the variables of game addiction and purchase intention. The practical implications of this study are also discussed in the results.

Keywords: Game Addiction, Purchase Intention, Gaming Behavior, Virtual Items

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1. INTRODUCTION

The video game industry is growing rapidly in Indonesia, with more and more Indonesians participating in gaming activities using mobile phones, consoles, or PCs. According to a report on the official Kompas website, the COVID-19 pandemic has led Indonesians to start playing online games as a means of escape from boredom due to the lockdown (Clinton & Pratomo, 2021). As a result of the lockdown, Minister of Communication and Information Technology, said at the 2021 HUB. At the ID Digital Startup and Indonesia Game Developer Exchange Registration Opening Press Conference, it was announced that the Indonesian video game industry's revenue in 2020 reached US\$1.7 billion and is expected to continue growing by around 25-35 percent. Indonesia is a promising market with the most extensive gaming user base in Southeast Asia. In 2022, the number of gamers in Indonesia surpassed 185 million. Seeing this market opportunity, many global players have entered Indonesia, such as Tencent with PlayerUnknown's Battlegrounds Mobile (PUBGM), Moonton with Mobile Legends: Bang Bang, and Garena with Free Fire, which have successfully dominated the Indonesian market. These games have become the leading competitive eSports titles in Indonesia with the highest number of professional players (Statista, 2023). Despite the rapid growth of the gaming industry and increasing revenue from in-game purchases, a critical issue emerges regarding how players make purchasing decisions, particularly whether these decisions are driven by rational considerations or by psychological factors such as addiction and social influence. This is further reflected in the significant economic contribution of the gaming sector, where daily spending by Indonesian users reaches approximately IDR 6.4 billion, indicating the strong monetization potential of this market (KompasTV, 2026).

Research has found that revenue from online gaming applications has increased by an average of 17.6 percent annually over the past five years (Dihni, 2022). Based on detailed operational results in 2021, revenue from iOS devices was recorded at US\$52.3 billion, representing a 9.87% increase from US\$47.6 billion in the previous year. Meanwhile, revenue from Google Play was US\$37.3 billion, a 16.93 percent increase from US\$31.9 billion in the previous year.

Recent industry data further confirms the strong monetization performance of mobile games. For instance, Honor of Kings generated approximately USD 135 million in iOS revenue in a single month, followed by Last War: Survival with USD 128.2 million and PUBG Mobile with USD 118.2 million (GamesGG, 2026). These figures indicate sustained player engagement and the effectiveness of in-game monetization strategies. Such revenue patterns suggest that player spending is not only frequent but also responsive to in-game events and seasonal updates, highlighting the role of psychological engagement in driving purchase behavior. In terms of user

acquisition, download trends also remain consistently high. Games such as Block Blast! reached 24.2 million downloads, followed by Free Fire with 20.7 million and Roblox with 18.8 million downloads in the same period (GamesGG, 2026). This reflects the continuous influx of new players into the mobile gaming ecosystem. The combination of high revenue and large download volumes indicates a strong conversion potential from user engagement to monetary transactions, making mobile games a relevant context for examining purchase intention and consumer behavior. One of the most significant sources of revenue for game developers is the sale of online items within the game. Examples of these online items include diamonds, coins, or other forms purchased through apps or game providers, or third parties, such as the Play Store, Codashop, and others.

TOP FREE	Downloads	TOP GROSSING	Revenue
1 Block Blast! HungryStudio	24,227,685	1 Honor of Kings Tencent	\$135,077,446
2 Free Fire: Beat Carnival GARENA INTERNATIONAL I	20,722,910	2 Last War: Survival FUNFLY PTE. LTD.	\$128,211,128
3 Roblox Roblox Corporation	18,856,529	3 PUBG MOBILE Tencent	\$118,210,709
4 Vita Mahjong Vita Studio.	13,938,118	4 Royal Match Dream Games	\$92,462,999
5 Subway Surfers Miniclip.com (Tencent)	13,731,924	5 Whiteout Survival Century Games Pte. Ltd. (Zhejiang Century Huatong Group)	\$91,627,359
6 Pizza Ready! Supercut, Inc.	13,175,593	6 Roblox Roblox Corporation	\$87,693,713
7 Ludo King® Gametion	11,797,442	7 Gossip Harbor®: Merge & Story Microfun Limited	\$77,783,060
8 Tile Explorer - Triple Match Learnings	11,381,212	8 MONOPOLY GO! Scopely	\$73,554,225
9 PUBG MOBILE Tencent	10,036,900	9 Candy Crush Saga King (Microsoft)	\$71,778,711
10 My Talking Tom 2: Pet Game Outfit7 Limited (Jinke Culture - Outfit7)	9,309,550	10 Kingshot Century Games Pte. Ltd. (Zhejiang Century Huatong Group)	\$65,148,060
11 School Party Craft Candy Room Games & RabbitCo	9,263,050	11 Delta Force Tencent	\$54,014,917
12 Solitaire Associations Journey Hitapps Games	8,956,932	12 Coin Master Moon Active	\$50,129,192

Figure 1. Mobile Game Revenue & Download Trends February 2026

Source: (GamesGG, 2026)

Online gaming has attracted considerable public attention due to the other impacts experienced by players. There is an innate urge to continue playing. The proliferation of digital advertising for online games, which aggressively appears on platforms, further increases their popularity, encouraging people to try them and purchase in-game items, which aligns with research showing that digital advertising increases consumer purchasing interest (Putri & Mulyanto, 2023).

However, playing online games also has negative impacts, such as frequent skipping school, using money given by parents to buy game vouchers, a lack of interest in education, and wasting money on unnecessary things (Hanifa & Hidayat, 2022). In line with this opinion, the

negative impacts of online game addiction on students include spending time playing games instead of resting until late at night, sleeping in class, regularly being late to school, a tendency to use rude (impolite) language, and using money that should be given to teachers to buy Mobile Legend diamonds (Ismi & Akmal, 2020). This urge extends beyond playing time to the desire for special, exclusively packaged items, prompting players to spend their money to fulfill this desire. However, many factors can motivate players to make purchases. Two benchmarks are player loyalty and best price, which serve as benchmarks and distinguish between players who make payments and those who do not (Hsiao & Chen, 2016).

Some games offer a freemium scheme, allowing players to play for free, while others can purchase additional items as needed. Paid players are more engaged in terms of frequency of play, involvement with the game, and place a greater emphasis on social interaction as a motivation for playing. Previous findings also suggest that paying players have several fundamental differences from non-paying players, with high-purchase players seeking to maximize enjoyment while non-paying players are satisfied with the game content they access (Gainsbury et al., 2016).

According to the Digital Report 2020: Global Digital Overview released by Data Reportal, the number of internet users worldwide reached 4.5 billion in early 2020 (Kemp, 2020). This result indicates that nearly 60% of the world's population uses the internet, twenty percent of all internet users aged 16 to 64 watch live broadcasts of someone playing a game. Meanwhile, one in seven people participates in sports matches. Considering that online gaming has not only positive but also negative impacts, the World Health Organization (WHO) defined gaming addiction, or gaming disorder, as a mental disorder in late 2017 (Kemenkes, 2018). Another study also found that gaming disorder influences the consumer purchasing behavior of virtual goods among online gamers (Hasanah et al., 2022).

A previous study conducted in India, with student respondents from two of India's most prominent universities, identified three factors related to the influence of addiction, loyalty, and purchase intention, all of which had a positive or significant impact (Balakrishnan & Griffiths, 2018). The first hypothesis found that addiction to online games increases loyalty to the online gaming experience. The second hypothesis found that addiction to online games increases purchase intention towards online mobile in-game features. The third hypothesis found that loyalty to online games significantly increases purchase intention towards online mobile in-game features. In this study, the researchers also intended to use the game addiction and purchase intention variables but added two moderating variables: education and income.

Other research has found that education and income levels can influence consumer behavior in purchasing well-known and expensive branded goods (Ratna & Nasrah, 2015). In this study, education and income will be used as moderators to examine the relationship

between consumer characteristics and their influence on game addiction and purchase intention. Education level is often linked to more careful consumer decision-making because education can improve information processing, critical thinking, and the ability to evaluate product value and necessity. Research also suggests that education increases product and brand knowledge, which helps consumers make more informed purchasing choices (Chmiel, 2024; Lv & Hu, 2022). Consumption behavior, specifically the ability to seek information about goods or services to be consumed, can be influenced by education level, especially among those with higher education. In the context of online gaming, education may influence how players process in-game stimuli and resist impulsive purchasing driven by addiction.

Income is another critical factor influencing purchasing behavior, as it determines an individual's financial capacity to engage in discretionary spending, including in-game purchases (Morning Consult Pro, 2025). Players with higher income are more likely to translate their gaming engagement and addiction into actual purchasing behavior, while those with limited financial resources may be constrained despite having strong purchase intentions. Even within a student population, variations in academic exposure and financial resources can lead to different consumption patterns, making these variables relevant in explaining online game purchasing behavior.

Although previous research has identified a relationship between game addiction, loyalty, and purchase intention, several gaps remain to be addressed. First, previous research has not considered the role of moderating variables such as education and income in influencing the relationship between game addiction and purchase intention (Balakrishnan & Griffiths, 2018a). Research by (Ratna & Nasrah, 2015) shows that education and income levels can influence consumer behavior, including in the context of purchasing online game items. Second, previous research has focused solely on university students in India, thereby failing to capture the dynamics of the gaming market in Indonesia, particularly in Surabaya, which has unique socio-economic characteristics. Surabaya's context is particularly pressing, as its 17+ demographic (65% with vocational/higher education) exhibits a unique gap on game PUBGM/MLBB/FF purchases surge 40% during economic slumps, unexamined by prior student-only studies (Jakpat, 2025). This concern is further supported by real-world evidence in East Java, where a mental hospital reported treating approximately 3,000 children and adolescents for mobile gadget and online game addiction within a single year, and these cases were associated with behavioral issues such as increased aggression and antisocial tendencies, highlighting the severity of gaming-related problems in the region (Channel Asia News, 2024). Third, this research will provide the latest data for 2026, which is relevant to the highly dynamic development of the gaming industry.

2. LITERATURE FRAMEWORK

Social Cognitive Theory

This study uses Social Cognitive Theory (SCT) as a grand theory because it is able to integrate environmental influences (game advertising) and internal factors (education/income) in moderating the relationship between addiction and purchase intention, thus providing a more holistic understanding. At its core, SCT posits that human behavior is the result of a dynamic, reciprocal interaction between personal cognitive factors, environmental stimuli, and behavioral patterns (Bandura, 2002). In the context of this research, game addiction is viewed as an emergent behavior driven by the interplay between external cues such as aggressive digital advertising and social gaming ecosystems and the internal self-regulatory mechanisms of the individual, which are significantly shaped by their educational background and financial capacity.

The Influence of Online Mobile Game Addiction on Purchase Intention for Online Mobile In-Game Apps

Addiction is related to the intention or action to purchase something (Lee et al., 2016; Tariq et al., 2024). Purchasing is an action that requires a drive or ability to obtain a specific benefit. Addictive behavior in a person encourages them to make purchases to complete characters or items they deem important. This behavior is especially actual with the ease of access to digital payments, which encourages hedonic purchasing behavior (Shah Alam et al., 2024). Some behaviors that meet the criteria for gaming addiction include saliency, mood modification, tolerance, withdrawal symptoms, conflict, and relapse (M. D. Griffiths, 2010).

Griffiths (2005) states that addictions, such as gaming behavior, comprise six common, interrelated components. Salience occurs when an activity becomes the most important aspect of a person's life, dominating their thoughts (preoccupation), feelings (urges/cravings), and behavior; the individual continues to think about the activity even when not actively engaged in it. Tolerance is the process whereby an individual requires increasing amounts of the activity (e.g., longer playing times) to achieve the same effect as before. Mood modification refers to the subjective experience of a change in mood resulting from engagement in the activity; this can manifest as an arousing "high" or, conversely, a calming effect or an escape from problems.

Furthermore, relapse is the tendency for an individual to revert to previous addictive behavioral patterns after a period of abstinence or self-control; even the most extreme patterns can rapidly re-emerge. Withdrawal refers to the unpleasant psychological (e.g., irritability, moodiness) or physiological (e.g., nausea, headaches, insomnia) states that arise when the activity is suddenly stopped or curtailed. Conflict refers to clashes arising either between the

addicted individual and those around them (interpersonal conflict, such as with family or friends) or within the individual themselves (intrapsychic conflict), specifically, the awareness of being overly involved yet unable to cut back or stop.

Expanding upon this model within the context of online mobile gaming, Balakrishnan & Griffiths (2018) introduced a seventh component: problems. This refers to tangible negative consequences resulting from excessive gaming, particularly sleep deprivation, the neglect of other important activities such as school or work, and feelings of physical discomfort after prolonged play.

One factor that contributes to the high motivation of individuals addicted to online mobile games is the offer of rare, permanent characters or features that can be obtained only by purchasing the game app. Therefore, the hypothesis is as follows:

H1: Game addiction influences purchase intention for online mobile game items.

The moderating effect of education on online mobile game addiction and intention to purchase online mobile in-game apps

Kurnada & Iskandar (2021) stated that the online learning period caused elementary school students to become familiar with online mobile games. From this introduction, students became addicted to playing online games, which led to a decline in their academic performance, aligning with research findings that suggest that the online mobile game PUBG Mobile can lead to players becoming addicted and making it difficult to manage their time for completing assignments and fulfilling their obligations as students (Fauzi, 2019). Research conducted by Kurnada & Iskandar (2021) found that 4 out of 6 elementary school students were addicted to playing the online games Mobile Legends and Free Fire. Factors contributing to elementary school students' gaming addiction include curiosity and a desire to start playing MOBA (Multiplayer Online Battle Arena) games. However, lack of parental supervision and the desire to make friends led students to play more frequently (Kurnada & Iskandar, 2021).

Furthermore, Anzani et al. (2022) conducted research analyzing the influence of the Mobile Legends game on the enthusiasm of adolescents aged 19 to 24 years old. They concluded that there are four aspects of game addiction: compulsion, withdrawal, tolerance, and problems with interpersonal relationships and health. Therefore, Anzani et al. (2022) concluded that there are two influences: a positive influence on adolescents, which is found to form gaming communities and foster more active thinking patterns, and a negative influence, which includes reduced learning motivation, dependence on games, and a decline in academic task recall.

Sugiyono (2019) stated that moderating variables can strengthen or weaken the impact of the independent variable on the dependent variable. In this study, the researchers used

education as a moderating variable for addiction toward online mobile games and intention to purchase online mobile in-game features. The goal was to determine whether education level can curb addiction, which influences purchase intention for features in online game applications. Therefore, the hypothesis is as follows:

H2: Education moderates the influence of game addiction and purchase intention toward online mobile game items.

The moderating effect of income on online mobile game addiction and intention to purchase online mobile in-game apps

According to Sukirno (2007), income refers to the amount of money a person receives for their work over a specific period, whether daily, weekly, monthly, or yearly. Institutions such as the government and financial institutions have paid attention to how young people manage their finances. Young people are raised in a culture of debt, facilitated by expensive lifestyles and the ease of credit card use, and they are often unfamiliar with essential financial skills such as budgeting, daily savings planning, and long-term planning, especially amidst the prevalence of hedonism (Karamaha, 2024). This behavior is also related to self-control in making purchasing or spending decisions, as well as how exposure to financial literacy influences it (Gunawan, A., & Syakinah, 2022).

Anyone who works has the right to receive a salary or wages for the performance they have provided to the company, as stipulated in Article 88, Paragraph (1) of the Manpower Law. A person also has the right to use their wages or salary as they wish, both for primary and tertiary needs. One primary need among gamers is to purchase features available in their favorite online games. Individuals tend to desire to purchase features or items in the games they play. One reason people purchase features or items in online games is perceived financial affordability (Kim et al., 2007). Therefore, income is expected to moderate the intention to purchase online mobile in-game features and online mobile game addiction. Therefore, the hypothesis is as follows:

H3: Income moderates the effect of game addiction and purchase intention on the purchase of online mobile game items.

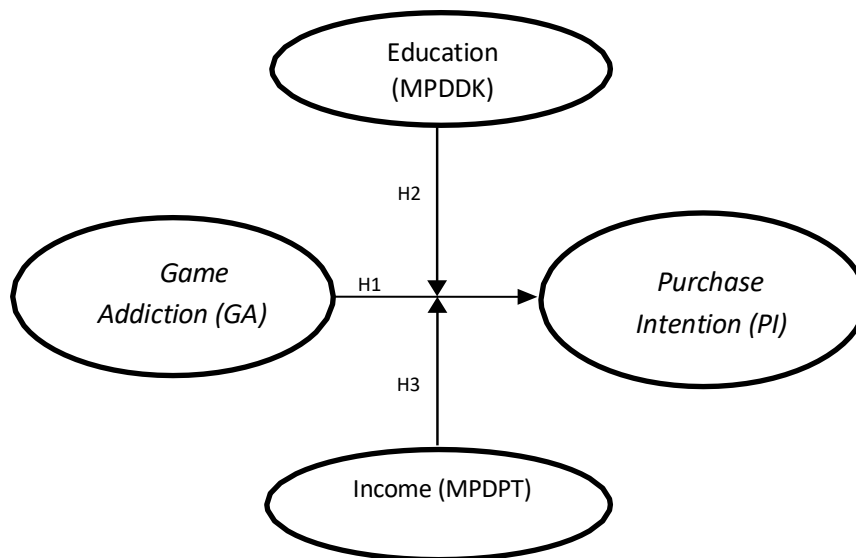


Figure 2. Research Model
Source: Research Data Processed (2025)

3. METHOD

This study employs a non-probability sampling technique, specifically purposive sampling, to select respondents who meet predetermined criteria relevant to the research objectives (Sugiyono, 2019). This approach is considered appropriate as it allows the researcher to focus on participants who have direct experience with in-game purchasing behavior, which is central to this study. The population in this study was online mobile game players in Surabaya who were at least 17 years old and had purchased at least one game item. The sample size in this study is determined based on recommendations by Memon et al. (2020), which suggest that for survey-based research employing structural equation modeling (SEM), an adequate sample size typically ranges between 160 and 300 respondents. This range is considered sufficient to ensure statistical power, model stability, and reliable parameter estimation. Therefore, this study targets a minimum sample size of 160 respondents, with an ideal range of up to 300 participants to enhance the robustness of the analysis.

Data collection was conducted online through social media and offline by attending local e-sports event & competitions and distributing Google Forms in Bahasa Indonesia to competing players. The game selection was limited to three games, with respondents choosing to play one or more of them: PlayerUnknown's Battlegrounds Mobile (PUBGM), Mobile Legends Bang Bang (MLBB), or Free Fire (FF) within the past year. The scale used to measure each statement was a Likert scale ranging from 1 to 5, with 1 indicating "never," 2 indicating "rarely," 3 indicating "sometimes," 4 indicating "often," and 5 indicating "always".

This study did not conduct a separate pre-test phase, as the measurement items were adapted from previously validated instruments in prior studies. Therefore, the content validity

of the constructs has been established through existing literature. To ensure the reliability and validity of the measurement model, this study employed statistical validation procedures using PLS-SEM, including tests of convergent validity, discriminant validity, and composite reliability. The operationalization of the variables and the questionnaire design are presented in Table 1.

Income was measured using six ordinal categories ranging from “less than IDR 1,000,000” to “more than IDR 7,000,000” per month. These categories were coded numerically from 1 to 6, representing increasing levels of income. Education was measured based on the highest level of education attained and categorized into four levels, ranging from below senior high school to postgraduate education. The categories were coded from 1 to 4 to reflect increasing educational attainment. As moderating variables, income and education were incorporated into the model using interaction terms to examine whether they strengthen or weaken the relationship between game addiction and purchase intention.

Table 1. List of Questions on the Questionnaire

Variable	Code	Question
Game Addiction (Balakrishnan & Griffiths, 2018)	Saliance	
	GA11	I think about playing online mobile games all day long
	GA12	I spend a lot of my free time playing online mobile games.
	GA13	I feel addicted to an online mobile game
	Tolerance	
	GA21	I played online games longer than expected/planned.
	GA22	I spend more time playing online mobile games
	GA23	I find it difficult to stop once I start playing online mobile games.
	Mood Modification	
	GA31	I play online mobile games to forget my real life
	GA32	I play online mobile games to relieve stress
	GA33	I play online mobile games to make myself feel better or improve my mood.
	Relapse	
	GA41	I have difficulty or cannot reduce the time spent playing online mobile games.
	GA42	Other people tried to reduce my time playing online mobile games, but they didn't succeed.
	GA43	I failed when I tried to reduce the playing time.
	Withdrawal	
	GA51	I feel uncomfortable when I can't play online mobile games.
	GA52	I feel like getting angry when I can't play online mobile games.
	GA53	I feel stressed when I can't play online mobile games.
	Conflict	
	GA61	I have had fights/arguments with other people (such as family, siblings, friends) while playing online mobile games.
	GA62	I ignore other people (such as family, relatives, friends) while I play online mobile games.
	GA63	I lied about the time I spent playing online mobile games.
	Problems	
	GA71	My time playing online mobile games causes lack of sleep
	GA72	I neglect other important activities (such as schoolwork, work, exercise) to play online mobile games.
	GA73	I feel uncomfortable after playing online mobile games for a long time.
Purchase Intention (Tariq et al., 2024)	PI1	I intend to buy more items in the online game

PI2	I highly recommend others to purchase items in online games.
PI3	I feel that buying items in online games is very useful.
PI4	In the future, I will tend to buy items in online games more often.
PI5	I plan to make more purchases of items in online games.

Source: Research Data Processed (2025)

The measurement of game addiction in this study is based on the component model of addiction proposed by Balakrishnan & Griffiths (2018), which includes dimensions such as salience, tolerance, mood modification, relapse, withdrawal, conflict, and problems. Following the approach of Balakrishnan & Griffiths (2018) these dimensions are treated as reflective indicators of a single latent construct representing overall game addiction.

4. RESULT AND DISCUSSION

RESULTS

Respondent's Profile

In this study, a sample of 324 respondents was obtained, comprising 273 respondents who were accepted and 51 respondents who were not accepted because they did not meet the specified criteria. This number in accordance with the provision that a valid sample size is between 160 and 300 respondents, which is very suitable for multivariate statistical analysis methods (Memon et al., 2020). The characteristics of respondents are summarized in Table 2.

Table 2. Characteristics of Respondents

Variable	Frequency	Percent (%)
<i>Gender</i>		
- Men	211	77,3
- Women	62	22,7
<i>Ages</i>		
- 17-24 years old	169	61,9
- 25-28 years old	85	31,1
- 28-35 years old	17	6,2
- > 35 years old	2	0,7
<i>Currently Status</i>		
- Student (Senior High School)	24	8,8
- University Student	184	67,4
- Worker	65	23,8
<i>Currently Position</i>		
- Currently Studying	208	76,2
- Business Owner	16	5,9
- Staff or equivalent	38	13,9
- Supervisor or equivalent	4	1,5
- Manager or equivalent	2	0,7
- A Company Leader or equivalent	1	0,4

- Freelancer	4	1,5
<i>Estimated Income per Month</i>		
- < Rp 1.000.000	47	17,2
- Rp 1.000.000 - Rp 2.500.000	144	52,7
- Rp 2.500.000 - Rp 4.000.000	33	12,1
- Rp 4.000.000 - Rp 5.500.000	16	5,9
- Rp 5.500.000 - Rp 7.000.000	13	4,8
- > Rp 7.000.000	20	7,3
<i>Game Playing Frequency in 1 Week</i>		
- 3 times	56	20,5
- 4-5 times	57	20,9
- Everyday	160	58,6

Continued

<i>Playing Duration in 1 Day</i>		
- < 15 minutes	2	0,7
- 15-30 minutes	24	8,8
- 30-60 minutes	37	13,6
- 1-2 hours	53	19,4
- > 2 hours	157	57,5
<i>Online Mobile Games Played</i>		
- Player Unknown's Battleground Mobile	101	36,9
- Mobile Legends Bang Bang (MLBB)	219	80,2
- Free Fire	43	15,7
<i>Motivation for Purchasing Game Items</i>		
- Improve gaming performance or skills	107	39,1
- Visual reasons or appearance are more attractive	166	60
- Get validation from fellow players	90	33
- For collection	93	34
- Refreshing	1	0,3
- There is a limited event	1	0,3
<i>Respondent's Friends Play the Same Game</i>		
- Yes	272	99,6
- No	1	0,4

Source: Research Data Processed (2025)

Table 2 shows that respondents were predominantly male, aged 17-24, students, and some employed. They played games daily, with a game duration exceeding two hours. Mobile Legends Bang Bang (MLBB) was the most popular game among online mobile gamers, with almost all respondents having friends who also played the same game. Motivations for purchasing virtual items in games included visual appeal, improved gaming performance, and personal collection.

DATA ANALYSIS

The data collected using the questionnaire were processed using a structural equation model with PLS 3.0 software. PLS-SEM is a method that uses weighted compounds of indicator variables to minimize unexplained variance and facilitate the liability for measurement errors (Hair et al., 2016). This research process began with the outer model testing stage, which consisted of several analytical steps: convergent validity, discriminant validity, and reliability testing. In the data processing and research model images, the game addiction variable is denoted by the GA code, the PI code denotes purchase intention, the MPDDK code denotes education level, and the MPDPT code denotes income level.

Convergent Validity Testing

Convergent validity is a test in which researchers evaluate the loading factor values to ensure that each indicator has a strong correlation with its construct. An acceptable loading factor value is a minimum of 0.50 (Hair et al., 2019). Discriminant validity was examined by examining the results of the HTMT test. Furthermore, discriminant validity was also assessed by comparing the square root of the AVE (Average Variance Extracted) with the correlation between constructs. The recommended AVE value should be greater than 0.50 to ensure that the construct adequately explains the variance in the indicator (Hair et al., 2019).

Reliability testing was conducted using two methods: Cronbach's Alpha and Composite Reliability. Both methods are used to measure the internal consistency of the indicators used in the study, with recommended values meeting specific criteria to ensure construct reliability. Composite reliability in confirmatory research must meet a minimum value of 0.70 to indicate an adequate level of reliability. However, in exploratory research, a Composite Reliability value in the range of 0.60 to 0.70 is still acceptable as an indicator of sufficient reliability (Ghozali & Latan, 2015). The results of the outer model test used for validity and reliability testing are presented in Table 3.

Table 3. Results of Convergent Validity Test

Variable/Indicator	Outer Loading	Cronbach Alpha	Composite Reliability	Results
<i>Game Addiction (GA)</i>		0.925	0.941	Reliabel
- GA1	0.765			Valid
- GA2	0.844			Valid
- GA3	0.675			Valid
- GA4	0.902			Valid
- GA5	0.902			Valid
- GA6	0.874			Valid
- GA7	0.851			Valid
<i>Purchase Intention (PI)</i>		0.915	0.936	Reliabel

-	PI1	0.823	Valid
-	PI2	0.856	Valid
-	PI3	0.846	Valid
-	PI4	0.884	Valid
-	PI5	0.909	Valid

Source: Research Data Processed

Convergent validity refers to the correlation between reflective indicator scores and the scores of the latent variable. The outer loading results are shown in Table 3, which shows the outer loading values for the game addiction and purchase intention variables. Table 3 shows that the Cronbach's alpha and composite reliability values for all variables are above 0.7, indicating consistent measurement. Cronbach's alpha coefficients of the structures are between 0.915 and 0.925. It is observed that internal consistency reliability is ensured because the CR coefficients are between 0.936 and 0.941.

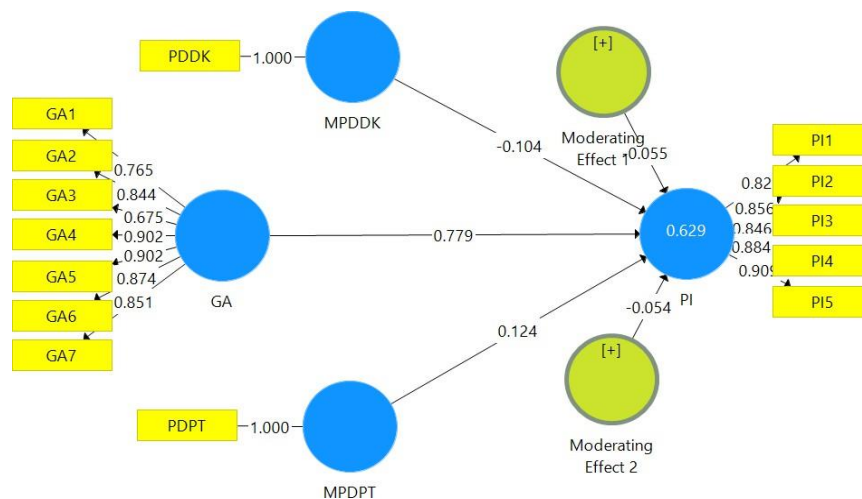


Figure 3. Outer Model

Source: Research Data Processed (2025)

Discriminant Validity Testing

The discriminant validity test aims to measure reflective indicators with latent variable scores. In other words, it is used to ensure that the differences between each concept and its respective latent variables are accounted for. The HTMT value should not be lower than 0.85 or 0.90 as a tolerance, indicating that the two constructs are truly distinct and thus have good discriminant validity (Hair & Alamer, 2022). The results of the heterotrait-monotrait ratio (HTMT) are presented in Table 4.

Table 4. Results of HTMT Test

	GA	MPDDK	MPDPT	Moderating Effect 1	Moderating Effect 2	PI
GA						
MPDDK	0,395					
MPDPT	0,273	0,444				
Moderating Effect 1	0,056	0,380	0,149			
Moderating Effect 2	0,149	0,129	0,583	0,247		
PI	0,839	0,334	0,091	0,031	0,026	

Source: Research Data Processed (2025)

Table 4 shows that all variables exhibit good discriminant validity. It should be noted that the game addictions variable with a purchase intention of 0.839 is still acceptable but at the threshold of 0.85.

R-Square or R² is used to estimate the variance of exogenous variables in influencing endogenous variables. The criteria for a substantial R-Square value are 0.67, moderate is 0.33, and weak is 0.19 (Ghozali & Latan, 2015). The results above show an adjusted R-Square value for the purchase intention variable of 0.622. This results indicates that the variables game addiction, education, and income simultaneously influence purchase intention by 62.2%. Meanwhile, 37.8% is influenced by other variables not examined in this study.

Table 5. Results of R-Square

Endogenous Variabel	Cut of Value	Results
R ²		
- Purchase Intention	≥ 0,20	0,629 Fit

Source: Research Data Processed (2025)

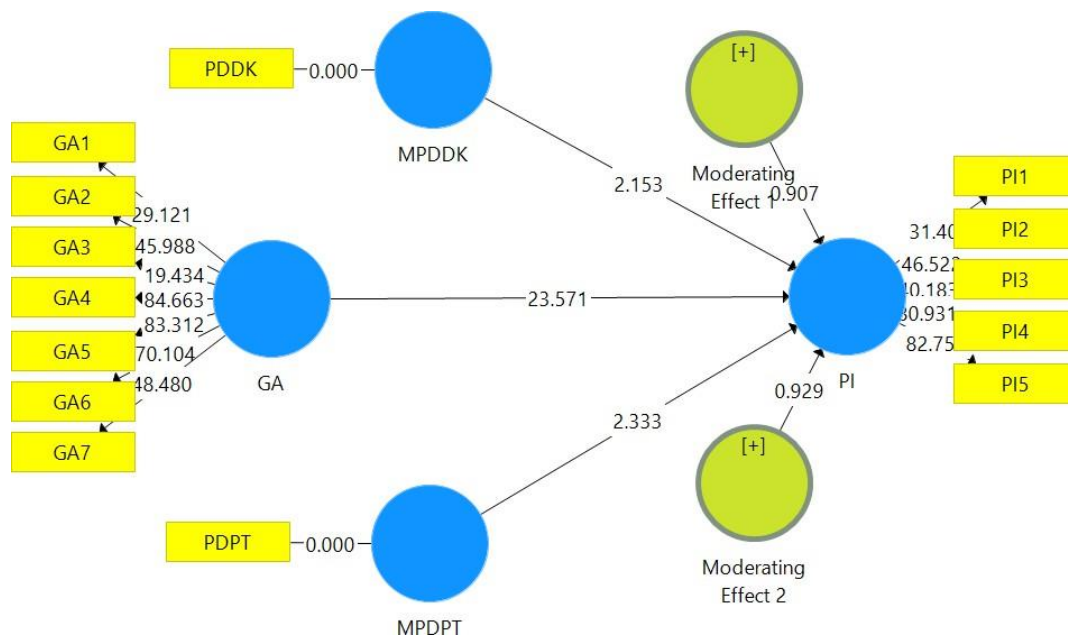
Hypothesis Testing

The results of the hypothesis testing in Table 6 indicate that game addiction has a significant influence on purchase intention. This is demonstrated by the t-statistic, which is 23.197, exceeding the cut-off value of 1.96. However, in the moderation test, the t-statistic for game addiction on purchase intention, moderated by education, is 0.948, below the 1.96 cut-off value. Similarly, the t-statistic for game addiction on purchase intention, moderated by income, is 0.867, below the 1.96 cut-off value. Therefore, based on these results, education and income have no moderating effect on game addiction and purchase intention.

Table 6. Results of Hypothesis Testing*Source: Research Data Processed (2025)*

Hypothesis	Original Sample	T-Statistic	Conclusion
H1: Game Addiction → Purchase Intention	0,799	23,197	Accepted
H2: Game Addiction * Education → Purchase Intention	- 0,055	0,948	Rejected
H3: Game Addiction * Income → Purchase Intention	- 0,054	0,867	Rejected

Figure 3 shows the contribution of each indicator to the variables. Game addiction has seven dimensions, with GA4, relapse, being the most important dimension, where users have difficulty reducing their gaming time. In testing the direct influence of education and income variables on purchase intention, both variables have a positive influence, with t-statistics of 2.153 and 2.333, respectively, exceeding the cut-off of 1.96.

**Figure 4. Inner Model***Source: Research Data Processed (2025)*

DISCUSSION

The Influence of Game Addiction on Purchase Intention

Based on the results of the hypothesis testing, the results indicate that game addiction has a positive and significant relationship with purchase intention. This hypothesis is accepted, stating that the higher a person's addiction to online mobile games (PUBGM, MLBB, or FF), the higher their intention to purchase in-game items or features. In this context, as explained by (M. D. Griffiths, 2010), the salience and tolerance dimensions play a role in linking game

addiction to purchase intention. Salience dominates the game's activities in the player's mind and consciousness, so higher salience further drives the player's psychological engagement in purchasing items in mobile games. Meanwhile, the tolerance dimension suggests that individuals need to increase the intensity of playtime to achieve satisfaction. These results support previous research by (Balakrishnan & Griffiths, 2018a), which found that game addiction has a significant and positive influence on purchase intentions.

Other research has explored the potential effects of factors such as self-efficacy, curiosity, achievement goals, and gaming experience on gaming addiction in young people. The study found that gaming experience serves as a crucial bridge between curiosity and achievement goals in a game, which drives addictive behavior in gamers (Yilmaz & Tunca, 2024). Consistent with mood modification measurements, which suggest that gamers choose to engage in online gaming to forget real life and distract themselves from stress, Gao et al. (2024) findings, which explored online gaming addiction behavior in college students, found that loneliness was positively associated with online gaming addiction.

Further analysis of the measurement model reveals that not all dimensions of game addiction contribute equally to the construct. Based on the outer loading values, indicators GA4 and GA5 exhibit the strongest loadings, indicating that these dimensions represent the most dominant aspects of game addiction among respondents. These findings suggest that certain psychological components, such as intense emotional engagement or compulsive involvement in the game, play a more significant role in driving purchase intention. In contrast, indicator GA3 shows the lowest loading, suggesting that this aspect of addiction is less influential compared to other dimensions. This implies that not all addictive behaviors equally translate into purchasing tendencies, and some dimensions may have a weaker role in shaping consumers' intention to spend on in-game items.

The Effect of Education in Moderating the Relationship between Game Addiction and Purchase Intention

Based on the results of the hypothesis testing, the results indicate that the education variable is not significant for game addiction and purchase intention. In other words, there is no moderation, thus rejecting the second hypothesis in this study. When the education variable is tested without being a moderator, the results are significant but have an adverse effect. This means that education level significantly influences purchase intention, but a higher education level reduces respondents' purchase intention to buy mobile game items. In other words, a higher level of education leads to greater awareness of purchasing choices. This aligns with the results of research conducted by Aristana (2023), which also examined the variables of age,

gender, education, and income in career women on online purchase intentions, but found no moderation.

In this study, respondents were predominantly students and young workers, with the majority playing for more than two hours per day. Among students, peer influence plays a significant role, as evidenced by the fact that 99.6% of respondents have friends who play the same games. Purchasing game items can improve gameplay performance, enhance the appearance of players, and ultimately, enhance pride among fellow players.

Previous research related to gaming addiction in students found that strong autonomy support can increase students' academic persistence and motivation, subsequently reducing online gaming addiction. Autonomy support refers to significant others (e.g., parents and teachers) who enhance an individual's sense of autonomy by providing emotional support and respecting their perspectives as they grow and develop. It has been shown that autonomy support from parents and teachers can significantly increase adolescents' academic motivation and persistence, which can subsequently contribute to reducing their online gaming addiction (Li et al., 2024). However, once someone is already addicted to a game, education level neither strengthens nor weakens their intention to purchase virtual items. Therefore, in this study, the income level variable has no moderating effect on the game addiction and purchase intention variables.

The absence of a moderating effect of education in this study may indicate that the influence of game addiction on purchase intention operates more strongly through affective and compulsive mechanisms rather than cognitive evaluation. While education is generally associated with more rational decision-making (Chmiel, 2024), its role may become less relevant when individuals experience high levels of psychological engagement or addiction. In such conditions, purchasing decisions may be driven more by emotional attachment and habitual behavior than by deliberate consideration. Furthermore, the relatively homogeneous educational background of respondents, who are predominantly students, may limit the variability required to detect a moderating effect. Compared to prior studies that involved more diverse demographic groups, the current sample context may reduce the observable influence of education as a boundary condition in the relationship between game addiction and purchase intention.

The Effect of Income on Moderating the Relationship between Game Addiction and Purchase Intention

Income reflects an individual's social status or class, meaning that different professional categories are typically accompanied by varying incomes. Studies on online purchasing behavior indicate that higher incomes are associated with a higher potential for online purchases (Tiruwa et al., 2018). Similarly, research by Ali et al. (2019) yielded similar results, indicating

that individuals with higher incomes tend to shop more frequently than those with lower incomes.

The results of the hypothesis testing indicated that income was not significant for game addiction and purchase intention, meaning there was no moderation. When income was tested as a non-moderating variable, the results were significant and had a positive effect. This means that income significantly influences purchase intention, and higher income levels increase respondents' purchase intention to purchase mobile game items. This aligns with the results of research by Aristana (2023), which also examined the variables of age, gender, education, and income in career women on online purchase intention, but no moderation was found. Most respondents in this study were students, and their primary source of income was pocket money. Therefore, high- or low-income levels had no impact on purchase intention once someone was addicted. Therefore, this study concluded that income had no moderating effect on game addiction and purchase intention.

The lack of a moderating effect of income may suggest that the relationship between game addiction and purchase intention is not primarily constrained by financial capacity in this context. Although income generally influences purchasing power (Lo, 2013; Morning Consult Pro, 2025), in-game transactions often involve relatively low-cost items, making them accessible even to individuals with limited financial resources. As a result, players with varying income levels may still exhibit similar purchasing tendencies when driven by strong game addiction. Additionally, the dominance of student respondents, whose income mainly derives from allowances, may reduce the variability of financial capacity across the sample. This condition may explain why income does not significantly alter the strength of the relationship between addiction and purchase intention, in contrast to prior studies that found stronger effects in more economically diverse populations.

5. CONCLUSION

Based on the results of this study, game addiction has a significant influence on purchase intention. This result indicates that the higher a person's level of addiction to mobile games, the more likely they are to make in-game purchases. However, the results also indicate that education and income do not act as moderators in the relationship between game addiction and purchase intention. This finding means that neither education level nor income significantly strengthens or weakens the influence of game addiction on purchase intention.

These findings imply that the gaming industry needs to understand the psychological factors that drive players to make in-game purchases, particularly those related to gaming

addiction. Game developers can consider more ethical and responsible marketing strategies to avoid the negative impact of game addiction on player consumption behavior. Furthermore, education regarding financial management and awareness of the impact of game addiction also needs to be improved, especially for players who are still in education and do not have a steady source of income. In addition, the findings related to the dimensions of game addiction suggest that not all aspects of addiction contribute equally to purchase intention. Therefore, game developers should pay particular attention to the most dominant dimensions, such as players' emotional engagement and compulsive involvement, as these factors are more likely to drive spending behavior. At the same time, developers are encouraged to implement responsible game design features, such as spending reminders or usage limits, to mitigate excessive consumption driven by these psychological triggers.

This study has several limitations, including the small sample size in the city of Surabaya, which means the results cannot necessarily be generalized to other regions. Furthermore, this study only measured the influence of education and income as moderators. Therefore, future research could expand the geographic scope and consider other factors that moderate the relationship between game addiction and purchase intention to provide more comprehensive insights. Future research is also recommended to consider more diverse respondent characteristics, particularly in terms of education and income distribution, to better capture their potential moderating effects. Studies involving broader demographic groups, such as working professionals or different socio-economic segments, may provide a more comprehensive understanding of how these variables interact with game addiction in influencing purchase intention.

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