

WHAT DRIVES IMPULSIVE BUYING IN VIDEO GAME MICROTRANSACTIONS? A STRUCTURAL EQUATION MODELING STUDY OF INDONESIAN GAMERS

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ABSTRACT

Microtransactions in video games have become a growing monetization strategy but also trigger impulsive buying behavior. This study aims to evaluate the factors influencing impulse buying in video game microtransactions in Jabodetabek, focusing on key variables such as Shopping Enjoyment, Impulse Buying Tendency, Urge to Purchase, Positive Affect, Negative Affect, and Hedonic Motivation. This research employs a quantitative approach with 436 respondents, analyzed using Structural Equation Modeling (SEM) with SmartPLS 3.0. The findings indicate that Shopping Enjoyment enhances Positive Affect, which subsequently drives Urge to Purchase and Impulse Buying. Additionally, Impulse Buying Tendency significantly influences Impulse Buying, whereas Negative Affect and Hedonic Motivation show no significant impact. These findings provide insights for the gaming industry to develop more ethical monetization strategies and help players manage their purchasing behavior more effectively.

Keywords: *Impulsive Buying, Microtransactions, Monetization, Video Game, Structural Equation Modeling*

1. INTRODUCTION

The use of microtransaction business models certainly changes how the entertainment sector industry benefits. With today's technology, users can easily top-up balances from e-wallets or Quick Response Code Indonesian Standard (QRIS). The reach of users from different countries increases the potential to increase profits. Video game developers will certainly personalize each user, so each offer for each player will be different. Most video games today are cross-platform, making it easy for users to switch devices anywhere and anytime.

In 2023, the world's gaming market revenue is estimated to reach \$184 billion, nearly 50% of which is contributed by mobile games of \$91.9 billion. The region with the largest revenue is occupied by Asia-Pacific with \$84.1 billion, followed by North America with \$50.6 billion [1]. According to Statista, F2P generated \$111.37 billion in 2023. With mobile games dominating the market, followed by PCs and consoles [2].

With the growing number of players and the increasing popularity of various gaming platforms, the gaming industry in Indonesia is growing rapidly, making it one of the promising parts of Indonesia's digital economy. The gaming market in Indonesia has reached US\$1.79 billion in 2023 [3]. It is predicted that the gaming market will increase to US\$2.5 billion by 2025 [4]. Quoting Rifan Ardianto as the Director of Trade Through Electronic Systems and Trade, as many as 70% of Indonesians are gamers, and one of the countries with the largest number of gamers in Southeast Asia.

Along with the development of the game industry, more and more events and conventions focus on video games, especially in Greater Jakarta. These events not only serve as entertainment venues for gamers but also serve as a platform to introduce local works and strengthen the Indonesian gaming industry ecosystem. In 2024, the Indonesia Game Festival (IGF) will hold a convention in Tangerang with the theme of video games. Reported from the Esports media site ggwp.id, the event has been visited by more than

52,000 visitors, with 79 local and international exhibitors [5].

The microtransaction system is one of the most frequently used monetization methods by developers during the development of the gaming industry. Based on research from Hamari et al. [6], not all players will make transactions. Players will tend to consider the value of the virtual products sold before making a purchase.

Based on data from DANA in 2021, virtual game voucher products are a positive trend with an increase in monthly purchases of up to 127.33%. In October of the same year, there was a surge in purchases reaching 103.95% and an increase of 28.42% from the previous year [7]. This phenomenon can cause concern due to the large number of online purchases. Evita [8] found that while transactions can enhance the gaming experience, the right purchasing strategy is necessary to maximize its benefits. Microtransactions can lead to excessive consumptive behavior if not carefully considered.

The use of microtransactions has both positive and negative impacts. This business model makes video game content easily accessible to all walks of life, so that video game development studios benefit [9]. However, microtransaction systems can result in users spending more money than they should. Video game developers certainly want their users to have the desire to buy digital products. When users want to get something, they will feel a huge urge to buy. Most F2P advertise their own digital products with high value such as exclusivity and time-gates so that it creates a sense of urgency. Therefore, users feel compelled to purchase the product. These digital items can be used for cosmetics, lootboxes, or to simplify the game process such as buffs and upgrades.

Many video game development studios using human psychology to get an advantage. With cheap prices and easy transactions resulting in impulse buying. Factors such as sensation-seeking, impulsivity, and emotion play a role in this behavior [10]. One form of microtransaction is the use of lootbox systems, which is a business model that will give random rewards with a certain percentage has raised more concerns due to underage gambling and ethical practices related to data collection [11], [12], [13]. Studies show that microtransactions can be associated with gaming and gambling disorders, indicating a risk of addiction [14].

The phenomenon of Impulsive Buying stems from an insatiable need to buy and an inability to consider the impact of such purchases. Even though they know the consequences, customers still feel a strong urge to fulfill their current desires [15]. The occurrence of Impulsive Buying is due to strong and sudden emotional desires arising from reactive behavior with signs of low cognitive control [16]. Individuals who shop online tend to be more impulsive compared to those who shop in physical stores [17]. This can be attributed to the increasing use of technology in the entertainment sector. Research from Parboteeah et al. [18] explains that impulse purchases can occur in online transactions.

There have been several previous studies that have analyzed impulse purchases in Greater Jakarta. It was found that hedonistic lifestyles and materialism increase people's likelihood of impulse purchases [19]. It was also found that people in the age range of 18-25 who play games in the First Person Shooter (FPS) and Multiplayer Online Battle Arena (MOBA) categories experience impulse purchases [20].

Most previous research on Impulsive Buying has focused on physical stores and e-commerce, so studies that address this phenomenon in the context of video games and microtransactions are still limited. Therefore, this study seeks to fill this gap by examining Impulsive Buying in microtransactions in video games in Indonesia, especially in the Greater Jakarta area.

2. LITERATURE REVIEW

2.1. Video Games

Video games are electronic games that allow users to interact with visual interfaces and respond to video devices through computer devices, consoles, or mobile phones [21]. The difference between video games and other media is that they are interactive in nature that require players to actively engage with the system and this system reacts to the player's behavior. Video games are entertainment media that are formed from various aspects. Esposito [22] said "Videogames are games that we play thanks to audiovisual equipment and can be based on a story". In other words, activities, regulations, audiovisual, narrative, culture, and technology affect how a video game is interpreted in society.

Many video games predict the extent of the game amid society. Thus, video games use a

freemium business model. The word "freemium" is a combination of "free" and "premium", which means that users can download and play games for free, but there are additional content or features that can be purchased to enhance the gaming experience. This development is based on the great potential obtained when it can be downloaded and played without cost. By offering games for free, it allows more people to try and play [23]. This can quickly increase the user base and create a larger community.

2.2. Microtransaction

Microtransaction is a "small transaction" business model online, especially on video games to generate revenue. According to Tomić [24] a microtransaction is an in-app transaction on a mobile phone or additional paid content in a video game. Microtransactions are payments that are determined by the purpose, not the price. The use of this business model has transformed the market in the entertainment sector, especially video games. The change in the video game business model starts from product development and delivery to Game-as-a-service (GaaS) [25]. Video game developers can release the game in full version with some extras such as DLC, cosmetics, and expansions. Microtransactions are divided into three categories: cosmetics, DLC, and pay-to-win (P2W) [26].

The cosmetics category is a product that does not influence the game but can enhance the experience. Cosmetics are often used by F2P video games with an in-game currency system to increase revenue. With cosmetics in place, video game developers can personalize each user so that they feel fun [27].

With DLC, users get additional content such as characters, missions, costumes, levels, which are continuations of the base game. Usually, DLC is available after a few months of the base game's release on the market. Now, the latest DLC trend made by video game developers is the season pass. When users purchase a season pass, users will get the base game and additional content in the future. So, users can use DLC when the content has just been released.

Lastly, P2W is a microtransaction that can influence the game. A digital product can be said to be P2W when the user gains an advantage while playing. Usually, these advantages are seen when playing with users who do not spend money [28]. In other words, users can be said to be proficient not because of ability, but because of the amount of

money spent [29]. Users with P2W are seen as having low ability and status [30].

These three categories can be sold with various types of microtransactions. One of the most controversial types of microtransactions is lootbox or gacha. Research conducted by Ash et al. [31] found that microtransaction mechanisms that require opportunities such as lootboxes can cause emotional and financial losses to children and adolescents because children find it difficult to record their expenses and cannot yet understand the value of currencies. The concept of lootboxes is taken from gambling that is set up to attract the attention of consumers so that they can spend a lot of money just on certain digital products.

2.3. Impulsive Buying

All businesses and organizations certainly need consumers. One of the challenges for businesses is acquiring new customers and retaining old ones. They need to differentiate themselves from competing businesses regarding the products they sell. The marketing team is responsible for the sales promotion, making one of the most powerful aspects to impact consumer purchasing decisions [32]. In addition to sales promotion, human psychology also influences purchasing decisions. There are many consumers who wonder about the reason they buy a product after making a purchase. This kind of consumer behavior is commonly called Impulsive Buying.

Impulsive buying, also known as impulse buying behavior, is when a consumer makes an unplanned, impulsive purchase based on a sudden urge, without considering the repercussions. Research says impulsive buying is a behavior that includes hedonistic, resulting in immediate enjoyment or gratification, without a thorough appraisal of the product or need [33]. Impulsive buying can cause emotional tension, with buyers experiencing a surge of pleasure followed by guilt or second-guessing. This differs from planned purchases, which are more rational. Previous research on impulsive purchasing behavior is extensive, reflecting its significance in consumer psychology.

There are two factors that influence Impulsive Buying, namely internal factors and external factors. Internal factors are factors directly related to buyers that make each consumer unique, namely: age, gender, educational background, wealth, and shopping partners [34]. For example, most men buy instrumental and recreational items to project their activities. However, most women

buy self-expressive items because they reflect their emotional aspects. On the external factor side, are factors from the store itself, namely: in-store stimuli, discounts, sales promotions, merchandise, bonus packages, product placement, and service. This can also be attributed to retail location, time of day, and shopping habits.

The impulse buying of virtual goods in games shares similarities with traditional impulse buying, but also has unique aspects. Rita et al. [35] suggests that game design elements can stimulate impulse buying just as a retail store's layout might.

However, far less is known about how this spontaneous buying behavior manifests in digital contexts like video game microtransactions, where intangible products and unique situational cues are involved. Cultural factors like saving habits and mobile commerce trends in Indonesia may uniquely influence impulsive buying, suggesting a need for more localized studies. This study on Indonesian gamers contributes to filling that gap. Future research should explore how regional differences in payment methods, cultural values, and regulations affect impulse behavior.

2.4. Hedonic Motivation

Hedonic motivation is a pleasure-seeking process in which consumers not only discover products based on price, but also from different elements such as pleasure or surprise [36]. In other words, the behaviour to pursue positive experiences and avoid negative experiences [37]. In consumer behavior, it is contrasted with utilitarian motivation, which is goal-oriented or functional. The word "hedonic" comes from the Greek for "pleasure". Hedonic motivation refers to pleasure-seeking and pleasure-seeking behaviours that encourage people to pursue and take part in activities that offer emotional satisfaction and sensory stimulation [38]. Hedonic motivation has a great influence on consumer behaviour in terms of impulsive buying tendencies.

Impulsive buying behaviour occurs more in those who are driven by hedonistic urges. Research conducted by Muruganatham & Bhakat [39] found that hedonic motivation is a key factor in impulse purchases. Hedonic motivation has a relationship with a sense of adventure and excitement. Impulsive buying has a positive correlation with hedonic motivation. Based on the research, sellers can increase sales by overcoming the hedonistic aspect. Simply said, the more a person values the enjoyment of shopping or the satisfaction of possessing new products, the more

likely they are to make impulse purchases. This pattern has been observed in a variety of contexts. In fashion retail, shopaholic consumers frequently cite the thrill of the hunt and the joy of discovering something new as triggers for unplanned purchases, and in online commerce, engaging interfaces and enjoyable browsing experiences can increase hedonic motivation and lead to click happy impulse purchases.

Hedonic Motivation behavior in the video game sector is also supported by research from Dylulgerova & Devreli [40]. Their research aims to examine the role of hedonistic motives in encouraging impulsive purchases of virtual goods in free games (free-to-play) by distributing web surveys and emails to F2P players who have purchased virtual goods in the game. The study divided Hedonic Motivation into six parts and made it mediate. The mediation is based on motivation that influences players to play video games. It was found that there was a significant relationship between hedonistic motivation and impulsive purchases of virtual goods. The results show that players buy virtual items impulsively because of fun, fantasy, social interaction, passion, diversion, and challenge factors that support the idea of video game environments encourage spontaneous purchases.

Research on hedonic drive and impulsive purchase is abundant in other region, but scarce in areas such as Indonesia. Cultural and market variables, such as wealth levels and attitudes towards pleasure-seeking, may impact how strongly hedonic urges lead to impulsive purchases. Hedonic motivation is an important component of the impulsive buying puzzle, but it must be studied alongside local elements in order to properly grasp its impact in new contexts such as video game microtransactions.

2.5. Impulsive Buying Tendency

Impulse buying tendency refers to an individual's stable predisposition to make spontaneous, unplanned purchases with little deliberation about consequences [41], [42]. Impulsive buying tendencies are often associated with the psychological state of consumers, including their moods and emotions. This trait is one of the consumer traits that is difficult to resist when consumers experience the urge to buy. In short, impulsive buying tendencies are a construction of the nature of consumers who act to provide stimulus without considering the consequences [36]. This statement was supported

by Iyer et al. [43] that found trait impulsivity was a significant predictor of impulse purchase.

When individuals are in a positive mood or experiencing positive emotions, their tendencies may lead to a stronger urge to buy as a way to improve or prolong their emotional state [44]. Consumers with higher impulsive buying tendencies may have different cognitive evaluations when faced with potential purchases, causing them to experience stronger impulses. They may focus more on the near-term benefits of the acquisition rather than the long-term consequences, such as buyer regret or financial problems [45].

Recent research also supports the significance of microtransactions in video game settings. According to Rita et al. [35], players' impulsive buying tendencies can be triggered by captivating game features and the availability of microtransactions, increasing their propensity for impromptu in-game purchases. Players who enjoy the game and experience high emotional satisfaction are more likely to make impulse purchases.

The concept of impulse buying has mostly been researched in urban consumer contexts with very few studies have examined Southeast Asian populations. Research on how this characteristic manifests itself among Indonesian gamers or customers in general is lacking. This gap is filled by the current case study, but more research may examine whether cultural norms mitigate the conversion of impulsive traits into purchasing behavior.

2.6. Negative Affect

Negative affect encompasses unpleasant emotional states such as stress, sadness, anger, or anxiety. Prior research about its definition of Negative Affect can be somewhat ambiguous, making it a point of debate. Early studies linked impulse shopping to positive emotion. However, later research introduced the concept of "retail therapy," which suggests that negative emotions might also induce impulsive purchases for self-gratification or mood control. With people experiencing anxiety or depression, they will be more likely to buy things impulsively, as this activity is one of their distractions or assistance [46], [47]. As a result, a person who has a lot of negative emotions is expected to have a strong urge to do Impulsive Buying [48]. Another study have found that emotions can influence shopping behavior [49]. Quoting Mick & DeMoss in Youn & Faber [50] argue that stress reactions and self-

reward are activities that can relieve depression. The stress reaction remove someone's ability to have self-control, which lead to increasing the likelihood of impulse purchase. These opinion can be concluded that negative emotions can cause Impulsive Buying.

Another example is when a person feels negative emotions such as high expectations or unavailability of goods, resulting in emotions of frustration and anger [51]. A feeling of tegret also arises if consumer have bought an item that is not the best item, or anxiety to determine whether to shop or not..

Research on Negative Affect with Impulsive Buying in video games uses the context of negative emotions as post-purchase. Research from Zhao et al. [52] discusses consumer reactions to impulse purchases, especially in the context of in-app purchases, using the Affect-Behavior-Cognition (ABC) model. This study analyzes the relationship between various negative reactions after purchase and how the attractiveness of products in the app moderates those relationships. The results of the analysis showed that awareness of a lack of self-control increased post-purchase regret which then triggered negative emotions such as anger and guilt.

These findings shows inconsistencies regarding negative affect's role. Some studies suggest negative emotions are more of a post-purchase consequence rather than a trigger. This inconsistency indicates that negative affect may not universally spur impulsive buying in every context.

There is less study on negative emotion and impulsive purchase in non-Western environments. Most research have focused on North America, Europe, or East Asia, assuming that psychological mechanisms are universal. Cultural traditions in Indonesia, such as emotional restraint, may impact people's decision to purchase when experiencing bad emotions. The lack of a meaningful finding in the Indonesian gaming sample highlights the need to avoid generalizing conclusions from Western studies.

2.7. Shopping Enjoyment

Shopping enjoyment is conceptualized as the intrinsic pleasure and fun that consumers derive from the shopping experience itself [25]. Consumer who undergo a shopping pleasure will spend more time shopping [53]. During shopping time, consumers may lead themselves to more impulses to buy [41], [42]. Consumers who perceive

shopping as a fun activity will get psychological rewards from shopping itself. Therefore, the pleasure obtained causes consumers to make unplanned purchases [54]. Not only does it trigger the urge to buy, but researchers have also found that shopping enjoyment can influence repurchases, re-patronage intentions and website visits.

However, most evidence for these effects comes from traditional retail or online shopping contexts. In the emerging context of video games, there is indication that shopping enjoyment similarly plays a role: a recent study of Indonesian Gen-Z gamers found that the more players enjoy “virtual shopping,” the more likely they are to make impulsive in-game purchases [55]. The study examined whether self-control could moderate the relationship between Shopping Enjoyment and Impulsive Buying, as well as how various aspects of self-control affect Impulsive Buying behavior. Notably, that study showed even strong self-control did not temper the influence of shopping enjoyment on impulse buying. It was found that Shopping Enjoyment significantly affects Impulsive Buying, meaning that the more you enjoy virtual shopping, the more likely a gamer is to make impulse purchases. Also, self-control does not act as a moderator between Shopping Enjoyment and Impulsive Buying, suggesting this factor can override behavioral restraints.

While shopping enjoyment has been studied extensively in online retail settings, its role in driving impulsive microtransaction purchases is underexplored. Apart from the previous discussed study, few works examine this trait in an Indonesian or video-game context, indicating a need for broader geographic and contextual validation of its effects.

2.8. Positive Affect

Positive affect, or feeling happy, excited, or in a good mood, has been linked to impulsive purchase. Prior research has consistently shown that customers are more likely to make impulsive purchases while in a pleasant mood, about 85% of respondents felt unrestrained and wanted to treat themselves [41]. It also found a positive correlation between enjoyment and the likelihood of overspending while shopping. Empirical studies have shown a positive correlation between feeling joyful or entertained and the likelihood of overspending or buying on impulse [42]. Silvera et al. [46] discovered that pleasant emotions lead to impulse purchase, supporting the assumption that

happy people are more open to spontaneous pleasures.

In the context of video games, Chung et al. [56] analyzed the relationship between positive emotions, in-game engagement, and impulse buying behavior in mobile games. The study also analyzed how emotional responses and levels of engagement in gaming contribute to unplanned purchases. From the results of the study, Positive Affect has a significant influence on Impulsive Buying. Players who feel satisfaction, excitement, and pride are more likely to make spontaneous in-game purchases. Additionally, the immersive engagement of games can amplify positive emotions, which then carry over into greater willingness to spend impulsively on microtransactions, as deeper engagement creates a stronger emotional bond to in-game purchases. This study also found three types of impulsive shoppers: (1) those who feel pleasure from impulse purchases, (2) those who experience emotional conflicts, and (3) those who have uncontrolled shopping tendencies.

While the link between positive emotion and impulsive purchase is well-established, little study has been conducted in Indonesia and other developing countries to explore this dynamic. Cultural characteristics can impact how easily high feelings lead to excessive behavior. In more collectivist or fiscally conservative societies, a consumer in a good mood may nevertheless practice restraint owing to norms or economic constraints. Current studies do not adequately capture these subtleties.

2.9. Urge to Purchase

Urge to purchase is defined as a sudden, intense desire to buy a product immediately, experienced just before making an impulse purchase [41], [42]. This urge is a desire that arises from consumers when shopping for certain items [57]. Impulses can also arise when there is a spontaneous desire when finding a product or brand in a store. The characteristics of the urge to purchase are a sudden desire, strong feelings, and a tendency to immediately buy items that can cause emotional conflict and occur with little consideration. In Beatty and Ferrell [54] model, they viewed Urge to Purchase as a crucial mediator that directly cause impulsive buying. Subsequent work has indeed shows that desiring moments precedes many impulsive purchases.

However, studies have shown that the need does not always lead to a purchase,

particularly when situational limits or conscious control are present. Badgaiyan and Verma [58] separate the Urge to Buy impulsively from Impulsive Buying Behaviour. They found that situational circumstances, such as time constraint and social environment, influence whether a perceived impulse is acted upon. Their findings shows that not every urge translate to a purchase.

In online and retail contexts, academics have discovered that visual cues or promotions can inspire rapid drives to buy. The advantages on online and retail is product touch and atmosphere can heighten the urge in physical stores as they could test the product before purchase [59].

In the gaming context, the concept of purchase urges is relatively new but gaining attention. One study has discussed the Urge to Purchase variable on video games. The study

analyzed the psychological and behavioral factors that drive the urge to buy in video games. It was found that players who made virtual goods transactions also experienced an urge to buy. The factors that drive the phenomenon are the nature of hedonism, pleasure, positive emotions, and the impulse to buy spontaneously [60].

Prior to recent work, there was almost little study on the impulse to buy in video game microtransaction settings and a noticeable lack in Indonesia consumer contexts. The majority of research on impulsive buying has been on either general impulsivity or characteristics of the ultimate action, with the "urge" notion mostly being examined in online and offline retail settings.

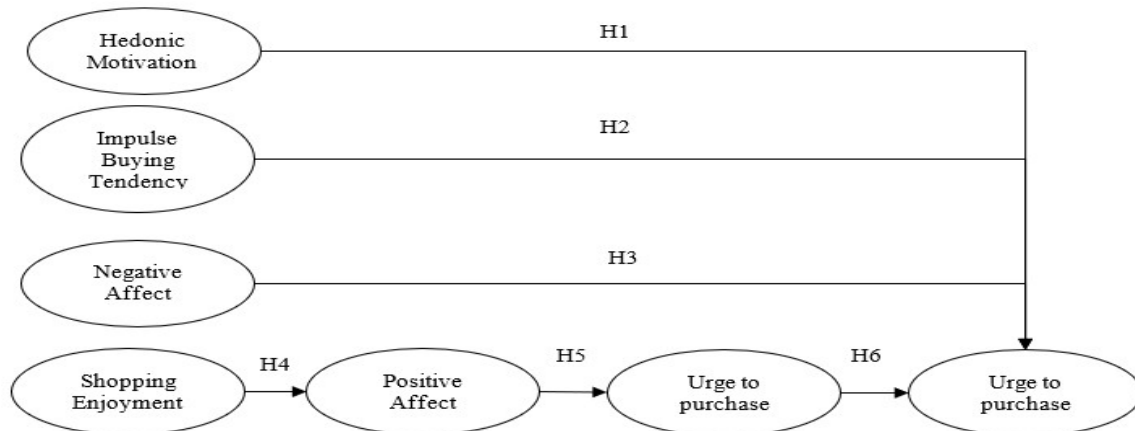


Figure 1: Research Model

3. METHODOLOGY

The foundation of this research model is derived from earlier studies. To increase the number of variables that can be studied, this research creates a new model that makes use of factors from another earlier studies. Due to a shortage of references, not all the factors from earlier research were employed in this investigation. By outlining the theoretical foundations and methodological strategies that direct our inquiry, this section aims to present a comprehensive overview of the conceptual framework that directs the design, data collection, and analysis of our study. It seeks to give readers a comprehensive understanding of the methodological rigor and theoretical framework underlying our investigation of the drive to buy.

The population for this study is Indonesian residents who live in Jakarta, Bogor, Depok, Tangerang and Bekasi (Jabodetabek) who have topped up in video games or microtransactions directly or through 3rd parties for any amount. The total population of Jabodetabek as of 2024 is 30.2 million [61]. The sample determination will use the Slovin formula to get a representative of the general population. After the calculation, this research has a target of 400 respondents. The video games that will be discussed are any games that have in-app purchases.

The sampling technique used in this research is purposive sampling. Purposive sampling is a non-probabilities sampling strategy by deliberately selecting participants based on characteristics or attributes relevant to the research objectives. The data used is primary data, which is data obtained directly from the source. Data will be

collected using a Google Forms survey distributed through connections and various social media.

The survey used a structured questionnaire with two parts: demographic questions and measurement items for each research construct. We used scales developed from previous studies for each construct to ensure content validity. Items for Impulse Buying Tendency and Urge to Purchase were adopted from consumer behavior research scales, while Positive Affect and Negative Affect items were tailored to in-game settings. The components were measured using 1-5 Likert-scale statements (1 = Strongly Disagree, 5 = Strongly Agree). This study used closed-ended question written in Indonesian. Before full deployment, the survey was pilot-tested with 10 respondents to ensure clarity of wording and to refine any ambiguous questions.

SmartPLS 3.0 was used to apply a two-step structural equation modeling (SEM) technique. The initial stage was to evaluate the measurement model to ensure construct reliability and validity. Conducting validity tests is very important in research because it can ensure that the instruments used produce accurate data. According to Hair, Jr. et al. [62], the general rule for standardized outer loading should be 0.708 or higher. Hair, Jr. et al. quoted from Hulland in 1999 that researchers often found a weak outer loading below 0.70. Another one is reliability test that use various methods, including Cronbach's alpha and composite reliability. To be considered consistent, both values must be more than 0.70. Therefore, researchers are advised to examine the effect of the removal of indicators on other measures of reliability and validity.

The second step was evaluating the structural model. Bootstrapping with 500 resamples was used to estimate the significance of path coefficients, resulting in T-statistics and p-values for each hypothesis. Explanatory power was evaluated using R^2 values for major endogenous constructs. To mitigate potential common-method bias, respondents were ensured of anonymity during data collection.

4. RESULT

4.1. Validity Test

In this test, loading factor with value > 0.70 can be considered valid. However, a loading factor value between 0.40 and 0.70 can also be considered valid. Generally, indicators between

0.40 and 0.70 are considered for deletion if the removal of the indicator leads to an increase or convergence validity.

Table 1: Outer Loading Table

Variables	Indicator	Outer Loading	Status
Impulsive Buying (IB)	IB1	0,678	Valid
	IB2	0,812	Valid
	IB3	0,884	Valid
	IB4	0,856	Valid
Urge to Purchase (UP)	UP1	0,831	Valid
	UP2	0,838	Valid
	UP3	0,837	Valid
	UP4	0,700	Valid
Negative Affect (NA)	NA1	0,997	Valid
	NA2	0,715	Valid
	NA3	0,711	Valid
Impulse Buying Tendency (IT)	IT1	0,840	Valid
	IT2	0,850	Valid
	IT3	0,797	Valid
	IT4	0,804	Valid
Positive Affect (PA)	PA1	0,888	Valid
	PA2	0,889	Valid
	PA3	0,855	Valid
Hedonic Motivation (HM)	HM1	0,758	Valid
	HM2	0,826	Valid
	HM3	0,675	Valid
	HM4	0,647	Valid
Shopping Enjoyment (SE)	SE1	0,849	Valid
	SE2	0,788	Valid
	SE3	0,857	Valid
	SE4	0,834	Valid

In table 1, there are several values of the loading factor indicator < 0.70 . Therefore, these indicators will be tested again to look for an increase in convergent validity by removing them. After testing, there are no indicators that need to be removed because the Average Variance Extracted and Composite Reliability have met the criteria. The next test after looking at the loading factor is Average Variance Extracted (AVE). AVE can be

said to be valid when > 0.5 . That is, the tested indicator explains more than half of the data. Here is the AVE table for each variable.

Table 2: AVE Table

Variable	AVE	Status
IB	0,659	Valid
UP	0,646	Valid
NA	0,870	Valid
IT	0,678	Valid
PA	0,770	Valid
HM	0,533	Valid
SE	0,692	Valid

Based on Table 2, all variables in this study had an AVE value above 0.50, indicating that all variables had met the convergent validity criteria. The variable with the highest AVE value was Negative Affect (0.870), indicating that the indicators have a very strong level of explanation for this variable. Meanwhile, the variable with the lowest AVE value was Hedonic Motivation (0.533) but still met the minimum required validity limit.

4.2. Reliability Test

The next step is reliability test. Reliability test is measuring the consistency and stability of a measuring instrument. There are several ways to conduct reliability tests, namely Cronbach's alpha and composite reliability. The two values must > 0.70 so that they can be said to have good consistency.

Table 3: Reliability Table

Variables	Cronbach's Alpha	Composite Reliability	Status
IB	0,825	0,884	Valid
UP	0,815	0,879	Valid
NA	0,868	0,855	Valid
IT	0,841	0,894	Valid
PA	0,850	0,909	Valid
HM	0,717	0,819	Valid
SE	0,851	0,900	Valid

Based on Table 3, all variables in this study had Cronbach's Alpha and Composite Reliability values above 0.70, indicating that this

research instrument has good internal consistency. The variable with the highest Composite Reliability value was Positive Affect (0.909), indicating that the indicators in this variable have a very high level of reliability. Meanwhile, the variable with the lowest Cronbach's Alpha value was Hedonic Motivation (0.717), but it still met the minimum threshold of required reliability.

4.3. Hypothesis Test

After reliability test, hypothesis test must be done. Hypothesis testing is a test to determine whether a statement is accepted or rejected against a population. The minimum criterion for a hypothesis to be accepted is to see a p-value < 0.05 and a T-Statistic > 1.96 .

Table 4: Hypothesis Table

Hypothesis	T-Statistics	P value	Results
H1	0.147	0.884	Unsupported
H2	14,458	0.000	Supported
H3	0,221	0.836	Unsupported
H4	14,135	0.000	Supported
H5	43,248	0.000	Supported
H6	5,775	0.000	Supported

From the results of table 4, two hypotheses were rejected, and four hypotheses were accepted regarding the factors that influence impulse purchases of microtransactions in video games. The following is an explanation of each hypothesis.

The influence of Hedonic Motivation on Impulsive Buying has a T-statistic value of 0.147 which means less than 1.96 and a P-value of 0.883 which means greater than 0.05. Therefore, H1 was declared rejected. These findings indicate that although hedonistic motivation may drive pleasure in gaming, this factor does not directly trigger impulse buying behavior in microtransactions. In other words, even if players enjoy the in-game gaming and shopping experience, it doesn't necessarily lead to impulsive purchasing decisions.

H2 shows the influence of Impulse Buying Tendency on Impulsive Buying has a T-statistic value of 14.458 which means it is greater than 1.96 and a P-value of 0.000 which means it is less than 0.05. Therefore, H2 is declared accepted. These results suggest that players who have impulsive shopping tendencies are naturally more prone to impulse purchases in games. This tendency can stem from the mindset of individuals who give less

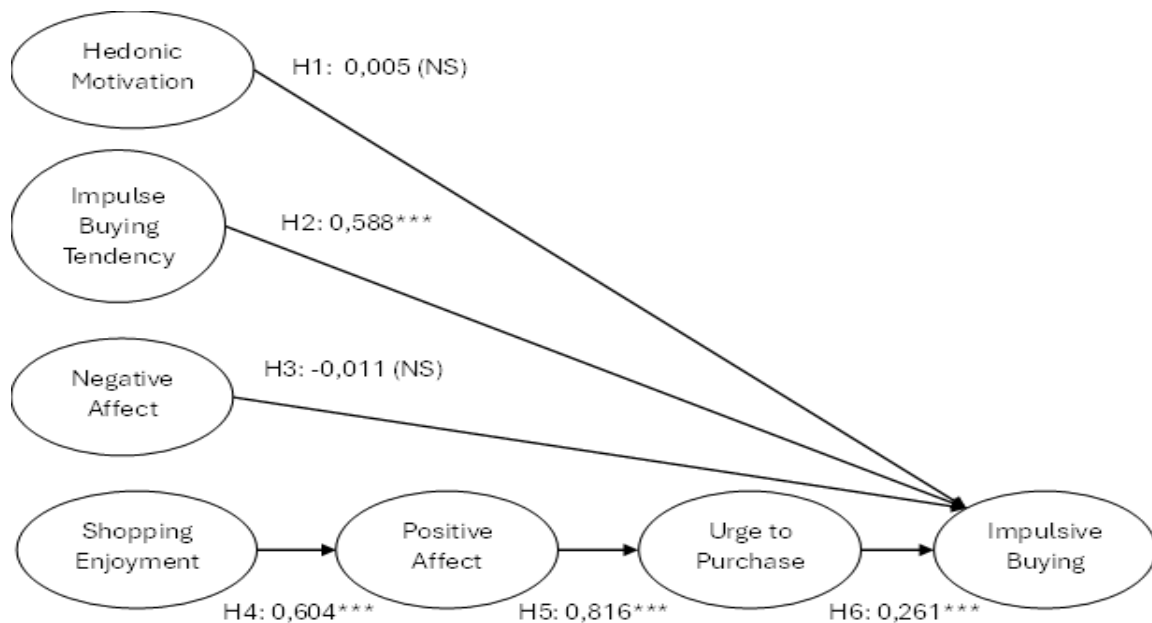
consideration to long-term consequences or are more easily tempted by offers that appear suddenly.

H3 indicates the effect of Negative Affect on Impulsive Buying has a T-statistic value of 0.221 which means it is less than 1.96 and a P-value of 0.883 which means it is greater than 0.05. Therefore, H3 was declared rejected. These results suggest that negative emotions do not have a significant impact on impulse buying behavior in the context of video game microtransactions. Although in some studies negative emotions can encourage consumptive behavior as a form of venting, the findings in this study suggest that players who experience negative emotions are not automatically encouraged to make impulsive in-game purchases.

H4 discuss the Shopping Enjoyment influence Positive Affect has a T-statistic value of 14.135 which means it is greater than 1.96 and a P-value of 0.000 which means it is less than 0.05.

Therefore, H4 was declared accepted. This is in line with the theory that a pleasant shopping experience can improve mood and create a feeling of satisfaction in consumers. In the context of video game microtransactions, players who enjoy the purchase process either by getting exclusive items, completing collections, or improving the gaming experience are more likely to experience positive emotions after making a transaction.

H5 also indicates the Positive Affect influence on Urge to Purchase has a T-statistic value of 43.248, which means it is greater than 1.96 and a P-value of 0.000 which means it is less than 0.05. Therefore, H5 was declared accepted. This indicates that the higher the level of positive emotions that players experience, the greater their drive to make in-game purchases. Players who feel happy, satisfied, or excited while playing are more susceptible to the urge to buy in-game items as a form of improved gaming experience.



(NS) = $p > 0,05$; *** = $p < 0,001$

Figure 2: Bootstrapping Model

Lastly, H6 talks about the Urge to Purchase influence for Impulsive Buying has a T-statistic value of 5.775 which means it is greater than 1.96 and a P-value of 0.000 which means it is less than 0.05. Therefore, H6 was declared accepted. These results reinforce the concept that the urge to buy is

one of the main factors in impulse buying behavior. When players feel a strong desire to make a purchase, they are more likely to make a transaction spontaneously without careful consideration.

4.4. Comparison with Prior Research

This study's findings are examined alongside previous literature to demonstrate how they contribute to current knowledge. Overall, our findings are consistent with and differ from previous studies on impulsive buying in games and digital marketplaces.

Research from Aiolfi et al. [41] and Bellini et al. [42] found that a pleasurable shopping experience can reinforce impulsive shopping impulses, which are also found in the context of video games, despite the presence of unique characteristics such as cosmetic items and microtransactions that are not related to functional needs in games. Our research shows that shopping satisfaction indirectly promotes Positive Affect, which drives the Urge to Purchase. This is a rarely studied mediation mechanism.

Our findings corroborate prior studies by Bellini et al. [42] and Artadita & Firmialy [55], which observed that enjoyment during shopping or purchasing activities significantly increases the likelihood of impulsive buying. This also resonates with the findings of Utama et al. [57] and Febrilia & Warokka [63], who reported that individual traits, particularly impulsive buying tendency, are predictive of spontaneous purchasing behavior in digital contexts.

Interestingly, our findings also contrast with some of the established literature. For instance, while Muruganatham & Bhakat [39] argued that hedonic motivation strongly influences impulsive buying, our results did not find a significant direct effect of this variable. This inconsistency may stem from the non-essential nature of in-game purchases, such as cosmetic items, which do not enhance core gameplay. Demographic differences, particularly our respondent base comprising students with limited income, may also influence how hedonic drivers manifest. Additionally, although some literature suggests that negative emotions can trigger consumption as a coping mechanism, our results found that negative affect did not significantly affect in-game impulse purchases, possibly because players experiencing negative mood states may disengage from gameplay entirely rather than buy spontaneously.

5. CONCLUSION

5.1. Theoretical Implication

This study contributes to existing consumer behavior theories by proving that impulse purchase models developed for traditional retail

environments may be used to digital gaming ecosystems with appropriate adaptations. The study sought to answer the question, "What drives impulsive buying in video game microtransactions among Indonesian gamers?" The findings provide a clear answer. Specifically, we discovered that Shopping Enjoyment boosts Positive Affect, which raises the Urge to Purchase, ultimately leading to impulsive buying behavior. These findings experimentally corroborate a psychological sequence of experiencing satisfaction, emotional arousal, and spontaneous action in the setting of microtransactions. This progression has not been previously demonstrated in studies on microtransactions. This segment emphasizes the importance of in-game retail environments as affective and behavioral triggers, portraying them as digitally mediated emotional places that promote impulse purchases.

Furthermore, our findings demonstrate that Impulse Buying Tendency, a stable individual attribute, is a strong predictor of in-game purchasing behavior. These findings are consistent with known frameworks in both offline and online retail, while also demonstrating the applicability of such models in IT-enabled environments like as video game markets.

Taken together, the findings indicate that impulsive microtransaction purchases are primarily the outcome of joyful involvement and inherent impulsivity, rather than reactions to negative moods or pure curiosity. In essence, impulsive purchase in video game microtransactions is primarily motivated by positive emotional states produced by enjoyable gaming and shopping experiences, as well as an individual's proclivity for impulsive conduct. This finding lends credence to the broader concept that design features of information systems can have a significant impact on user behavior.

While hedonic motivation are commonly seen as important drivers of impulse buying in traditional retail and e-commerce, our data suggest that they play a less role in gaming contexts, where purchases are primarily aesthetic and unrelated to gameplay performance. This shows that emotional delight may act as a moderator rather than a direct cause of impulsive conduct in games. Furthermore, our findings suggest that platform-specific factors such as gamification components, reward loops, and time-limited offers may have a bigger impact than traditional hedonic cues.

Despite its contributions, this study recognizes certain major limitations. In contrast to

other domains' findings, variables like as negative affect and hedonic motivation had no significant influence on impulse purchase. These disparities may be due to the characteristics of our sample, which consists mostly of young adults with varying emotional responses or valuations of visual in-game rewards. Furthermore, our model highlighted internal psychological dimensions while ignoring external and contextual variables such as peer influence, social norms, and game design mechanics, which have been demonstrated in previous research to influence digital consumption. Future study should aim to include a larger range of environmental and social elements in order to create a more comprehensive and predictive model of impulsive behavior in digital environments.

Importantly, this study contributes to the limited academic discourse on Southeast Asian digital consumers, particularly in light of Indonesia's expanding gaming sector. By focusing on Indonesian gamers, we were able to localize and test globally accepted ideas, bringing cross-cultural insights to a field dominated by Western and East Asian perspectives. We propose that future models of digital impulsive buying behavior incorporate regional cultural nuances, economic realities, and platform-specific dynamics to improve theoretical generalizability and practical applicability.

5.2. Managerial Implication

The main factor that drives impulse buying in the game is the Impulse Buying Tendency, where players who have impulsive tendencies are more prone to making purchases without careful consideration. This means that marketing strategies that take advantage of player impulsivity can be more effective in increasing in-game transactions.

For example, game developers can use gamification strategies such as exclusive loot boxes to trigger player impulses. However, there needs to be a balance so that this strategy remains ethical and not exploitative, especially for players who lack self-control in shopping.

This study found that Shopping Enjoyment increases Positive Affect, thus influencing the Urge to Purchase and encouraging Impulse Buying. In other words, players who feel good while shopping in-game are more likely to make impulse purchases. Based on these findings, game developers can create a more enjoyable and satisfying shopping experience, for example by providing attractive animations at checkout, offering exclusive bundles with additional rewards, and taking advantage of special events that provide a more enjoyable

shopping experience. If the in-game shopping experience is well-designed, then the player's positive emotions will increase, ultimately driving more impulsive transactions.

Other findings suggest that Urge to Purchase is a key factor in triggering impulse purchases. Players who experience Urge to Purchase are more prone to making purchases without careful consideration, especially when they are in a happy or excited state. Knowing this, game developers can use marketing strategies such as limited time offers, flash sales, exclusive products with deadlines, and additional rewards when first making a fundraiser.

However, it is important for developers and marketers to use monetization strategies ethically, by giving players control so that they do not feel exploited by in-game transaction schemes. Additional regulations can also help ensure that the microtransactions mechanism is not redundant and still provides a fair and enjoyable gaming experience for all players.

5.3. Limitation

This research has several limitations that need to be considered as evaluation material in future research. First, while the study's sample was large, it was limited to the Greater Jakarta area. This geographical focus may restrict generalizability to larger gamer communities. Culture and Economic considerations specific to this location may impact purchasing behavior, therefore results should be interpreted with caution.

Second, the study covered a wide range of game genres and virtual goods, including cosmetic items, functional upgrades, and loot boxes. This breadth introduces volatility that we did not fully control, posing a risk to internal validity.

Third, operationalization of the Negative Affect variable, which may vary depending on the phase of the transaction (before, during, or after purchase). This ambiguity poses a potential threat to internal validity.

Finally, the scarcity of prior research focused specifically on microtransactions in video games limits the theoretical foundations available, making it necessary to rely on general impulsive buying frameworks. Future research should seek to clarify emotion-based constructs across transactional phases and contribute localized models based on the unique characteristics of gaming environments.

5.4. Future Studies

Future research should investigate social and contextual elements, such as peer influence and in-game community dynamics, which may impact impulsive buying. Comparative studies across other gaming genres or cultures could also be beneficial in determining if our findings hold in various circumstances, or if, for example, strategy game players behave differently than casual mobile gamers.

future work should delve deeper into the role of negative affect – while it was not significant in our survey, qualitative research such as interview or focus group discussion could reveal whether some players do spend impulsively when upset or under certain conditions will occurs. Incorporating psychological measures like stress levels or using techniques to detect mood could enrich our understanding of when negative emotions matter.

Lastly, future studies could explore whether our model applies to specific microtransaction types, such as loot boxes and gacha mechanics, which may elicit different psychological responses (some studies suggest loot boxes trigger gambling-like impulses). Answering these issues will enhance our understanding of consumer behavior in digital economies.

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The dataset generated and analyzed during this study is fully anonymized and has been made openly available on Zenodo: <https://doi.org/10.5281/zenodo.15663845>. It is publicly accessible for academic research and other non-commercial purposes.

Credit Authorship Contribution Statement

Farza Alif Mahendra: Conceptualization, Methodology, Formal Analysis, Investigation, Resource, Data Curation, Writing – Original Draft, Visualization. **Riyanto Jayadi:** Writing – Review & Editing, Supervision. **Tanty Oktavia:** Writing – Review & Editing, Supervision.

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