Bachelor Thesis

THE BATTLE FOR BUCKS

A study on gamers' willingness to purchase microtransactions in Battle Royale games.

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Abstract

Aim: Microtransactions have become an increasingly more popular form of generating revenue in the gaming industry in recent years, especially in Battle Royale games. There are many different forms of microtransactions, such as weapon and player skins, in-game currency, or battle pass premium tiers and tier upgrades. For that matter, this study aims to investigate players' willingness to purchase microtransactions in Battle Royale games and tries finding the relationships and influences that selected factors have on the intention to make such purchases.

Methods: To answer the research questions, the study uses an online questionnaire that was designed to investigate five hypothesized variables, namely Game Enjoyment, Game Engagement, Perceived Fairness of monetization practices, Risk-taking behavior, and Impulsivity, as well as the potential influence they have on Purchase Intention. After data cleaning, the sample consisted of (N=) 94 participants (Age: M=30.94, SD=9.68; Gender: Male=82%, Female=15%, Other=3%).

Results: Results of the analysis showed that there were no significant relationships of the hypothesized variables on purchase intention in this sample. However, having purchased microtransactions in the past was positively related to future purchase intentions and to risk-taking behavior traits.

Conclusion: The findings of this study contribute to the research on microtransactions in video games, highlighting that having previously made purchases of in-game content relates to a higher likelihood of making such purchases again in the future which can be used by game developers to adapt their strategy for creating revenue. It also highlights that higher Enjoyment, Engagement, Perceived Fairness, Risk-taking behavior, as well as Impulsivity don't make gamers more likely to spend money on microtransactions.

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1. Introduction

Since the first video game “Tennis for Two” was released in 1958, video games have become more and more popular and integrated into our lives. Nowadays, children grow up surrounded by digital advertising, social media and technologies such as smartphones and game consoles. In 2024, the number of game users worldwide is estimated to be around 2.58 billion and is predicted to rise up to 3.02 billion by the year 2029 (Statista, 2024a). This substantial number makes it clear that gaming is not just a niche hobby for a selected few anymore, but it is an activity that people from all around the world indulge in every day. With this many people playing video games, the revenue created by the gaming industry is extremely high and will continuously increase between 2024 and 2027 where it is estimated to reach around 363.19 billion U.S. dollars (Statista, 2024b). This revenue doesn’t only consist of consumers spending money to buy games, but a portion of it is made up from in-game purchases such as microtransactions. These microtransactions can take the form of in-game currency, cosmetic items such as weapon skins or player outfits, battle passes or loot boxes to name a few.

Originally, the concept of generating revenue in the gaming industry was based on a fixed price for a game that would give the customer full access to all its contents (Ivanov et al., 2021). This fixed price was usually set at around $60/€60, however as technology advanced and game development has become pricier, developers and publishers were in need for different strategies to generate revenue which ultimately led to microtransaction practices as we know them today (Rayna & Striukova, 2014).

Previously, microtransactions and especially loot boxes have gotten a negative connotation by the gaming industry as game developers and publishers have been criticized for relying on said in-game transactions to generate revenue (McCaffrey, 2019). A game that has been heavily criticized for the implementation of loot boxes was *Star Wars: Battlefront* II,

published by Electronic Arts (EA). After receiving a large amount of backlash, this transactional system has been removed completely from the game. Yet, even to this day there are still a lot of games that include microtransactions. One specific genre of games that will be focused on in this study is the genre of Battle Royale (BR) games. Examples of BR games include PlayerUnknown's Battle Grounds (PUBG), H1Z1, Apex Legends and Fortnite. The reasons for selecting this genre are that most BR games are multiplayer only, meaning that players are put up against each other which creates a highly competitive aspect that would also partly explain the huge popularity of this genre in recent years. Generally, the aim of said games includes continuous farming of items such as weapons for combat against opponents with the ultimate goal to be the last person standing (Choi & Kim, 2018). Apart from the main goal of winning, a lot of BR games include microtransactions such as premium battle passes that allow the player to unlock items within the game, or purchase in-game currency and skins to customize their playable character and give their gaming experience a personal touch.

Considering the large amount of microtransactions in video games, especially in the BR genre, the aim of this study is to research the willingness of gamers to spend additional money on games they already own. To analyze what influences the willingness to spend money, factors such as game enjoyment, game engagement, assessment of fairness of monetization practices, risk propensity and impulsiveness that have the possibility to influence their underlying motivation were reviewed and analyzed. To summarize, the following overarching research question has been established:

RQ: What prior experiences or external factors are associated with higher willingness to spend money on in-game microtransactions within Battle Royale games?

2. Theoretical Framework

To continue the research, firstly a theoretical perspective will be given where concepts will be defined that help to understand and explain the relationships between factors and the underlying motivations on the willingness of gamers to spend money on microtransactions. Furthermore, the terms and concepts that are being used for the analysis will be defined, and the link between them will be explained. To understand the relationships between the variables that are used for the study, hypotheses and potential predictions of how the independent variables may impact the dependent variable will be formulated.

In the following analysis, five independent variables that were selected because they seem fit from a theoretical viewpoint are correlated with the dependent variable separately. Additionally, two moderation effects are hypothesized that describe a potential correlation between multiple independent variables. Bringing these independent variables together is not only assumed to have a stronger effect on willingness to pay for microtransactions, but the interaction and co-existence of the variables also makes it clear that a potential moderating effect that is insightful for this study might be present.

2.1 Theory of Planned Behavior

There are multiple ways to explain human behavior. One commonly used way to do so is through the theory of planned behavior. This theory by Ajzen (1991) is a model to predict human behavior based on a few main concepts. It focuses on the intentions of people to perform certain behaviors and predicts said intentions through attitudes toward the behavior, the subjective norms which consist of the perception of the individual about the behavior and can be influenced by the judgement of people that are in close relation to the individual, as well as perceived behavioral control. Perceived behavioral control is used in this theory rather than actual behavioral control as it “is concerned with judgments of how well one can execute courses of action required to deal with prospective situations” (Bandura, 1982, p. 122, as cited

in Ajzen, 1991). In other words, perceived behavioral control isn't concerned with how much control individuals actually have, rather how they perceive the control they have over a situation.

In relation to the present study, the theory of planned behavior can be quite useful in explaining why people purchase microtransactions. Focusing on their attitudes towards microtransactions for example, one is more likely to buy in-game content when a positive connotation is present already. In combination with the perceived behavioral control, this intention may be further enhanced if individuals have the perception that their purchase behavior is still under their full control rather than being influenced by other external factors such as advertising strategies and the likes. Also, the subjective norms play a role in shaping an individual's behavior and the influence of the judgement of people in their close relation like family or friends can have a direct impact on one's decision to purchase microtransactions.

2.2 Social Identity Theory

Talking about the impact that close relatives have on an individual's decision to purchase microtransactions also leads to the next theory that can help explain the way that gamers' willingness to pay may be influenced. As humans are social beings, they therefore also belong to social groups. The social identity theory describes, among other things, that belonging to a social group has an implication for our well-being, as well as for our behavior and it shapes our knowledge and emotional attachment to the social group (Tajfel & Turner, 1979, as cited in Hogg, 2016). In a social group, there are usually certain norms and in-group, as well as out-group prototypes that help the groups distinguish between others and find differences between other groups. These differences and norms are often a key factor in defending your own affiliation with your group and categorizing people into associates or non-associates (Abrams & Hogg, 1990, as cited in Hogg, 2016).

In gaming, said groups also exist. They can take various forms, for example through communities of a certain game, a player's friend group and their social circle, other online communities that focus on a certain genre of games or YouTube channels where subscribers and viewers come together to consume media content about games. In these communities, the in-group and out-group prototypes that Hogg (2016) describes take form and shape the way that a large group of people enjoy games in certain ways to fit in with others. Creating a link to the willingness to purchase microtransactions, if a certain game community is very keen on buying in-game content, members of that community may also feel persuaded to do so in order to fit in with their peers.

2.3 Willingness to pay / Purchase intention

Usually, willingness to pay is a term often used in the field of marketing research to estimate the demand both for private and public goods and to allow the optimal design for pricing of said goods, as well as the development of new products that are to be published in the future (Breidert et al., 2009; Wertenbroch & Skiera, 2002). Similarly, in other fields like health care, the concept of willingness to pay enables health care institutes to offer clients a more understandable assessment of benefits of health care programs that makes it easier for them to find a fitting program that is within their budget (Olsen & Smith. 2001). Linking these assessments of willingness to pay to the gaming industry, in this case it relates to the purchase intention of gamers to spend additional money on Battle Royale games they already own by either buying in-game currency, additional game content or other forms of microtransactions. Although frequent purchasing of microtransactions may be associated with problem gambling and thus has a negative connotation (Gibson et al., 2022), I will not go into the consequences of problem gambling because it would broaden the scope of this research too much as it is simply concerned with factors influencing purchase intention for microtransactions and not the potential consequences that come with in-game purchases. The

goal of the current study aims to identify the variables that could potentially influence willingness to spend money on microtransactions.

2.4 Independent variables

The following section will discuss the various independent variables that are expected to have an effect on the dependent variable "Willingness to pay". Furthermore, hypotheses will be included that present the expected effects of game enjoyment, game engagement, perceived fairness of monetization practices, risk-taking behavior, and impulsiveness. Enjoyment and engagement have been chosen as variables to cover the gaming aspect that the study focuses on while perceived fairness of monetization practices was chosen to have a direct link to attitudes towards microtransactions. Lastly, risk-taking behavior, as well as impulsiveness were chosen as personality traits that potentially have a relationship with increased purchase intention.

2.4.1 Game enjoyment

Enjoyment in itself is perceived very subjectively as different people have different preferences. However, according to Warner (1980), you feel enjoyment when doing an activity that causes desire within you which at the same time gives you a sense of satisfaction. This definition can be applied to all sorts of activities, be it cooking, driving a car, gardening, sleeping, or in the case of this study, playing video games. Previous research such as the one from Sherry (2004) also suggests that media consumption is primarily used for enjoyment. The enjoyment hereby consists of multiple factors that play together, namely entertainment, flow, the passing of time, arousal, and relaxation to name a few. Although media consumption also includes television use, part of the enjoyment comes from playing video games. In the context of online shopping, Bedi et al. (2017) created a link that highlights increased enjoyment as one possible antecedent of purchase intention and it was concluded that a better web experience helps to keep online shoppers satisfied. Making a

connection to gaming, it can be hypothesized that game enjoyment can be maintained at a high level if the design of the game is well thought out, which in turn also has the potential to increase purchase intention for microtransactions.

With regards to gaming, Csikszentmihalyi (1993, as cited in Sherry, 2004) goes into greater detail about the state of flow that is induced while playing. This state is created because oftentimes video games have clear goals that the player can achieve, it is possible to adjust the difficulty level to fit the capabilities of the players or there are competitive elements within a game that are designed to keep the player busy either by competing against others or trying to beat one's own high score. Linking these findings with Battle Royale games clearly highlights the attempt to induce this state of flow within the player base, most noticeably through the competitive aspects of playing against others and trying to be the last person standing.

From a theoretical standpoint, the Theory of Planned Behavior may help to explain the link between enjoyment and purchase intention. Positive emotions toward the game, such as enjoyment, might lead to increased intentions to engage in related game behaviors, so players who enjoy the game may be more inclined to have positive attitudes toward spending money on it. Furthermore, derived from the Social Identity Theory, high degrees of enjoyment may help a player identify with the gaming community of the game they're playing. Having a sense of belonging to a group may also influence their desire to conform to group standards, such as paying microtransactions in order to gain status inside the group.

H1: Game enjoyment is positively correlated with purchase intention for microtransactions.

2.4.2 Game engagement

Just like game enjoyment, engagement previously has also been described through several different concepts like immersion, flow, or involvement with an activity in a broad sense. For gaming specifically, Bouvier et al. (2019) have written down a number of different terms for overlapping concepts that can be used to explain engagement. Attention for example can be described as an important factor of engagement and it can be specified as the "willingness to concentrate" (Brown & Cairns, 2004, as cited in Bouvier et al., 2019, pp. 493-494). Another concept to describe engagement is immersion which is most often used by players and developers to describe the effect that games have on the player. This effect has components of sensory immersion that indicate visuals of the game, challenge-based immersion which puts focus on the difficulty of the game, as well as the skill players need to complete challenges, and lastly, imaginative immersion which comes into play when gamers are drawn to the narrative of the game (Ermi & Mäyrä, 2005). Furthermore, the concept of involvement is used to explain engagement and Bouvier et al. (2019) define it as "the willingness to exchange information with the system through the interaction devices" (p. 495). Lastly, presence is described as another concept for engagement. For this concept, the authors define it as "the genuine feeling of existing in a world other than the physical world in which the body is" (Bouvier et al., 2019, p. 495).

Making connections to the Theory of Planned Behavior and Social Identity Theory, similar links like the ones made for game enjoyment can be made. Higher engagement may represent a player's positive attitudes towards the game they are playing, giving them a sense of control over their actions. Furthermore, highly engaged players are more likely to identify more strongly with the gaming community. This identification, combined with the positive attitudes they gain from high engagement, may lead to behaviors that support group norms and values, such as purchasing microtransactions to maintain a higher status in their group or to record their progress in the game through in-game purchases.

With these concepts in mind, I wish to research the level of engagement that players experience while playing Battle Royale games and how it relates to and possibly affects their willingness to spend money on microtransactions.

H2: Game engagement is positively correlated with purchase intention for microtransactions.

2.4.3 Perceived fairness of monetization practices

Generally, microtransactions are one form of monetization practice that are used to generate revenue in the gaming industry (McCaffrey, 2019). Overall, fairness is a term that is hard to define as there are many different morale issues that come with it. Jacobs and Wallach (2021, p. 382) describe fairness as "an unobservable theoretical construct" arguing that the concept in itself is hard to measure because so many different definitions, depending on the context, exist. For the purpose of this study however, fairness is the perception of the player about whether monetization practices, or microtransactions to be precise, should be a part of a game as a whole, but also whether they should offer advantages to people who choose to purchase them or not. Additionally, the fairness aspect comes into play when thinking about the content of the microtransactions that are being offered to players.

Referring to the Theory of Planned Behavior, if players believe monetization practices as fair, they are more likely to develop a positive attitude towards in-game purchases. On the other hand, if they perceive the practices as unfair, their purchase intention might decrease. Furthermore, fair monetization strategies can potentially influence the normative beliefs players have about the game, shaping their perception of what is acceptable and unacceptable behavior in games.

H3: Perceptions of fairness regarding microtransactions are positively correlated with purchase intention.

2.4.4 Risk taking behavior

Risk in itself can be defined as the possibility of loss and therefore behaviors that are considered to be risky may lead to the chance of subjective loss (Furby & Beyth-Maron, 1990, as cited in Igra & Irwin, 1996). As Zhang et al. (2018) describe, inherent risks are associated with all human activities. In our everyday lives, we constantly face risks and have to make judgments about their seriousness, which is why risk-taking propensity can also be defined as "a person's cross-situational tendency to engage in behaviors with a prospect of negative consequences such as loss, harm, or failure." (Zhang et al., 2018, p. 153). With these definitions in mind, it can be argued that people who consciously take part in risky behavior and actively seek risk are generally aware of the consequences and the already defined chance of subjective loss that their behavior might cause. Depending on the behavior, these consequences can take form in many different ways. For the present study, risk taking behavior is connected to the risk of monetary loss as the focus is put on microtransactions and the purchase of such, like in-game currency, weapon or player model cosmetics, additional game content, etc.

Players who are more likely to take risks might also perceive fewer barriers to purchase microtransactions. Their risk-taking behavior has the potential to influence the perceived behavioral control they have over the situation, and they might see the act of purchasing as less risky, thus being more inclined to give in-game purchases a chance. Additionally, when considering Social Identity Theory, risk-taking players may engage in social comparisons within the gaming community with the goal of matching or even outperforming the behaviors of others. These social comparisons with link to risk-taking may

lead to higher purchase intentions if players see others taking similar risks with in-game purchases.

H4: Higher levels of (a) risk-taking behavior and (b) impulsiveness correlate with increased purchase intention.

2.4.5 Impulsiveness

There is a lack of precise or generally accepted definitions of impulsiveness, yet in the context of health studies, more specifically in a study about adolescents engaging in activities that result in self-harm, impulsiveness is described as a tendency for immediate and unexpected reactions caused by internal, as well as external stimuli without being aware of the potential negative effects these reactions might have (Dougherty et al., 2009). This definition can also be related to the purchase of microtransactions as impulsive purchases are often a cause of people spending money spontaneously. In the context of gaming, Rita et al. (2024) found that impulse buying is a factor that often comes into play when making purchases of in-game content. In this case, flow is often described as one of the factors that has an impact on impulse buying. Other research conducted by Wu et al. (2016) suggests that in the context of online shopping, an engaging design is one of the factors that correlates with impulse purchases. As Battle Royale games often have engaging gameplay through competitive elements and possibly enable players to enter a state of flow while playing, including impulsiveness as one of the independent variables makes sense in the context of this research.

The aspect of perceived behavioral control that is explained in the Theory of Planned Behavior also helps to explain the connection between impulsiveness and purchase intention. Highly impulsive people may experience a lack of control over their purchase behavior, which leads to a higher purchase intention. Their spontaneous personality can potentially lead individuals to make impulsive purchase decisions without much deliberation beforehand.

Furthermore, impulsive players might be more susceptible to peer influences and social triggers. Seeing other players purchase microtransactions might influence them to follow their example and, while acting on impulse, aligning their behavior with perceived group norms.

2.5 Moderation effects

In this section, possible moderation effects that are expected to be found with the research are named next to the general hypotheses that have already been listed before.

2.5.1 Moderation effect 1

Game enjoyment has already been considered to be an important factor influencing players' purchase intention. When players display high levels of enjoyment, they may be more inclined to purchase microtransactions. However, perceptions of fairness in monetization practices are expected to be able to significantly influence this relationship. Even if a player enjoys a game, if they believe the monetization of it as unfair, their purchase intention is likely to decrease. On the other hand, if they perceive the monetization practices as fair while also having high game enjoyment, these attitudes might translate into a higher willingness to purchase in-game content. For that reason, perceived fairness of monetization practices is hypothesized to moderate the relationship between game enjoyment and purchase intention, increasing purchase intention when both enjoyment and fairness perceptions are high.

> H5: The relationship between game enjoyment and purchase intention is moderated by perceived fairness of monetization practices. Individuals with higher levels of enjoyment and perceived fairness show increased purchase intention.

2.5.2 Moderation effect 2

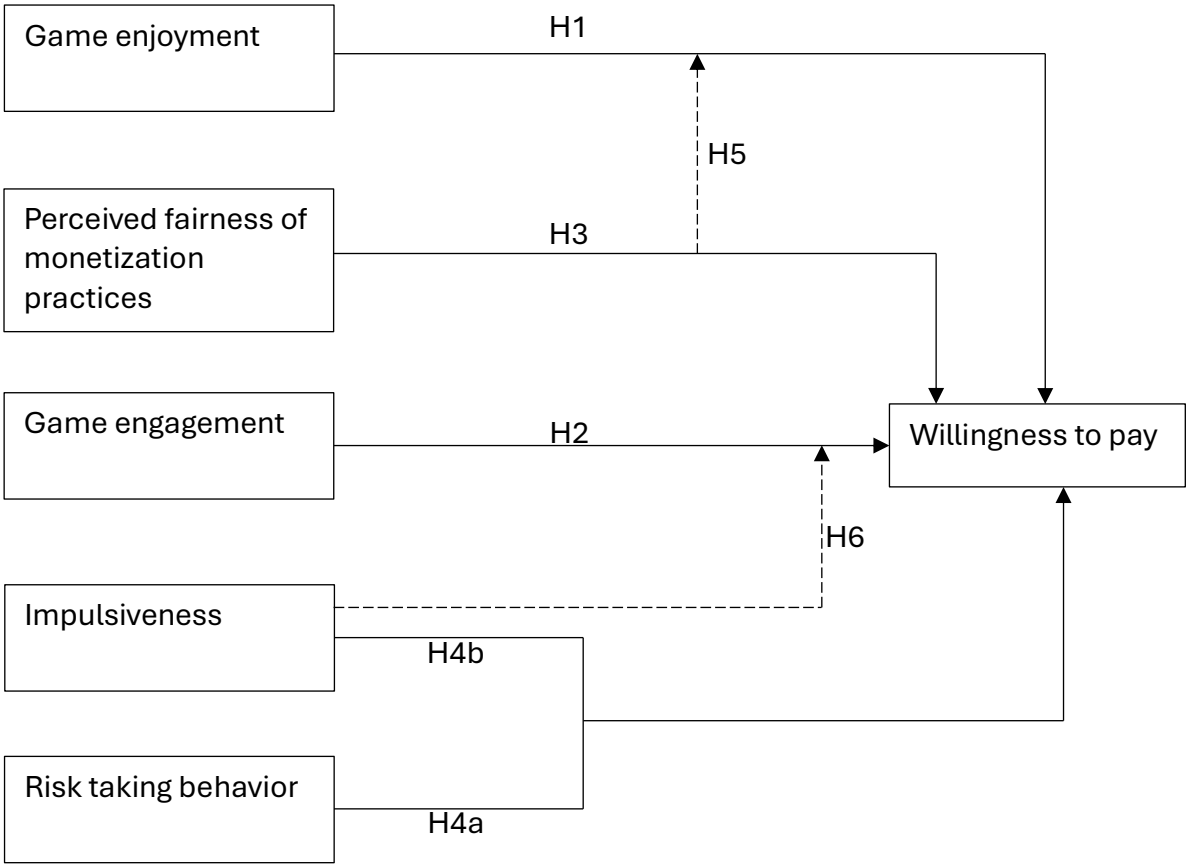
In short, game engagement represents the level of immersion and involvement a player experiences while playing a game. Through numerous ways, higher game engagement has the

potential to lead to higher purchase intentions for in-game purchases. Impulsiveness can also play an important role in this relationship as players with high impulsiveness are assumed to make more spontaneous purchasing decisions that are driven by momentary urges rather than rational thoughts. As a result, while game engagement serves as a baseline for potentially making in-game purchases, impulsiveness is expected to trigger the actual decision to make purchases. This suggests that the relationship between game engagement and purchase intention is moderated by impulsiveness, with individuals who show high game engagement and high impulsiveness having a greater likelihood to make in-game purchases.

> H6: The relationship between game engagement and purchase intention is moderated by impulsiveness, so individuals with higher levels of game engagement and impulsiveness show higher purchase intention.

2.6 Conceptual Model

Figure 1
Conceptual model of the study



3. Methods

3.1 Design

The aim of the study was to observe the willingness to pay and how it is influenced through multiple variables, as well as how certain variables might change the purchase intentions of participants of the study. It was decided that the method of data collection should be quantitative in the form of an online survey. This decision was made to collect and analyze a sufficient amount of data to adequately represent a larger population and potentially develop connections as well as recommendations to a more general target audience. The survey aimed to test the relationships between the independent variables and willingness to pay through

measurable, number-based data that was then interpreted and allowed for conclusions to be drawn.

Generally, the survey was divided into multiple sections. Each section consists of a scale to measure the respective variable, whereas the first section measured general demographic data to get a better understanding of the sample of the study.

3.2 Participants

The survey was designed using Qualtrics and then published and distributed on various gaming subreddits. Reddit was chosen as a platform to distribute the survey as it is most suited to find the exact target audience for this study. Additionally, Reddit is a suitable platform as it allows to post the survey to specific subreddits that have their main focus around BR games such as Fortnite, PUBG, Apex Legends, etc. which are part of the game genre that the study is aimed for. Reddit was the only used platform for data collection, with participants being restricted to be at least 18 years old or older with previous experience in gaming. A total of 157 participants have filled out the survey and after cleaning the data with regards for consent and completeness of the survey, a total of (N=) 94 valid responses have been recorded and used for data analysis. The mean age of the sample population was 30.94 years (*SD = 9.*68) with an overwhelmingly male proportion. 77 participants identified as male (82%), 14 participants identified as female (15%), and 3 participants specified their gender as other (3%). Based on their own estimation, 6 participants (6%) see themselves as casual gamers that occasionally play video games but wouldn't consider themselves highly experienced. 14 participants (15%) reported to have intermediate experience with gaming while 43 respondents (46%) see themselves as experienced. 31 respondents (33%) reported to have expert experience in gaming. A full visual representation of the demographics can be found in Appendix A.

3.3 Procedure

Members of the subreddits and users of the platform Reddit in general were able to access the survey through a provided link that would forward them to the site of the survey. As a first step, the user was requested to give their informed consent to be a participant in the study, where they were informed about the purpose of the study, as well as received information about the confidentiality and secure management of their data. Within the informed consent, the participant was also notified that they have the possibility to opt out of the survey at any point without the need to give an explanation and that they do not need to answer any questions they feel uncomfortable with.

Once the participant gave their informed consent, they were directed to the next page where they were asked to fill out some demographic information about themselves such as age, gender and ethnicity. Following the demographic information, the participants were asked to assess their overall gaming experience, as well as to indicate their current favorite BR game. With the piped text function in Qualtrics, their entry about their favorite BR game could be picked up again throughout the survey. The sections afterwards dealt with the participant's overall purchase intention, asking questions about how they view microtransactions or how tempting it is for them to purchase in-game content. Following their purchase intention, participants were asked to estimate their previous spending habits of in-game purchases and to estimate how much money they spent in relation to others in a time frame of three months. The next section asked questions about game enjoyment where the piped text was implemented. Next up, a section about game engagement asked the participants questions about their thoughts while gaming. To continue, a scale about the perceived fairness of monetization practices was included in the survey to help assess whether participants believed that the use of microtransactions was appropriate in their eyes or not. The last two sections dealt with the participants tendency to take risks and to be impulsive, to help assess the hypotheses formulated in the theoretical framework.

3.4 Measures

The measures of the study consist of demographics, purchase intention, game enjoyment, game engagement, perceived fairness of monetization practices, risk-taking behavior, and impulsiveness. Every measure is represented as its own section in the survey that contains a scale to measure each specific variable. Each individual scale contains a number of different questions that are associated with the variable. The sections dealing with purchase intention, game enjoyment, game engagement, perceived fairness of monetization practices, and risk-taking behavior use a 5-point Likert scale, whereas the section for impulsiveness uses an adapted version of the 4-point Barratt Impulsiveness Scale (BIS-11). To determine the scale reliability and measure underlying constructs, a factor analysis was performed for each scale separately. Additionally, the value for Cronbach's Alpha was computed for each scale

3.4.1 Purchase Intention

To get a general idea of the purchase intention, which is part of the dependent variable, a scale with a set of eight items formulated by the researcher has been created. The items are formulated to measure the willingness of the participant to spend money on games they already own through statements like "I see microtransactions as investments in my game". The use of a 5-point Likert scale was made that ranges from "strongly disagree" to "strongly agree". High scores indicate high purchase intention, and low scores indicate low purchase intention. A factor analysis performed on the data indicates one underlying factor that explained 50% of variance with factor loadings ranging from .40 to .92. A Cronbach's Alpha ($\alpha = .88$) indicates good scale reliability.

3.4.2 Game Enjoyment

Game enjoyment is measured by a set of seven questions that were formulated by the researcher, asking about the personal enjoyment and interest in Battle Royale games. The scale was not adopted from previous studies as it was intended to be adapted to the specific topic of Battle Royale games. The use of a 5-point Likert scale ranging from "strongly disagree" to "strongly agree" was decided and high scores indicate high game enjoyment while low scores indicate low game enjoyment. With use of the piped text, the specific game that participants indicated previously in the survey was picked up again in the items of the scale. A factor analysis indicates one underlying factor that explains 60.3 % of variance with factor loadings ranging from .55 to .86 while a Cronbach's Alpha ($\alpha = .89$) indicates good scale reliability.

3.4.3 Game Engagement

Game engagement is measured by an adapted version of the game engagement questionnaire by Brockmyer et al. (2009) that is used to measure individuals' engagement within a game through various constructs such as "Presence", "Absorption", "Flow", and "Immersion". It has been altered to better fit the aim of the study and shortened from a set of 19 items to 10 items in total because questions that were unfitting for the research were removed. Additionally, the scale was turned from a 3-point Likert scale to a 5-point Likert scale ranging from "strongly disagree" to "strongly agree" to better fit in with the rest of the survey and to be able to draw clearer conclusions during data analysis. High scores on the scale indicate high game engagement, and low scores indicate low game engagement. The factor analysis for the scale shows two underlying factors. Factor 1 explains 24.2% of variance and has factor loadings ranging from .12 to .71 with a Cronbach's Alpha of $\alpha = .82$. Factor 2 explains 19.2% of variance with factor loadings ranging from .11 to .65 and a

Cronbach's Alpha value of α = .74. A cumulative explained variance of 43.4% has been calculated.

3.4.4 Perceived Fairness of Monetization Practices

The perceived fairness of monetization practices is measured by a set of 14 questions that were formulated by the researcher through a 5-point Likert scale that ranges from "Strongly disagree" to "strongly agree". High results on this scale would indicate an unfair perception of monetization practices whereas low results for the scale would indicate the perception of monetization practices to be fair. Factor analysis for the scale shows four underlying factors. Factor 1 explains 16.6% of variance with factor loadings ranging from .14 to .76 and α = .73. Factor 2 explains 13.3% of variance and has factor loadings ranging from .16 to .89 with a Cronbach's Alpha value of α = .72. Factor 3 explains 10.1% of variance with factor loadings ranging from .18 to .83 and an Alpha of α = .67 while Factor 4 explains 9.8% of variance, factor loadings range from .18 to .85 and an Alpha of α = .59. A cumulative explained variance of 49.9% was calculated.

3.4.5 Risk-taking behavior

Risk-taking behavior is measured by a set of eight items that were adapted from Zhang et al. (2018) who created the General Risk Propensity Scale (GRiPS). Overall, the items of the scale are designed to measure individuals' likelihood to take risks. In this section, the focus was not put on gaming because it is intended to assess the participants' overall propensity for risk taking. To do that, questions such as "Taking risks makes life more fun.", or "I enjoy taking risks in most aspects of my life." were asked with a 5-point Likert scale ranging from "strongly disagree" to "strongly agree". Factor analysis shows one underlying factor that explains 51.7% of variance with factor loadings ranging from .56 to .85 and a Cronbach's alpha of α = .89 indicates a good reliability of the scale.

3.4.6 Impulsivity

The scale to measure impulsivity is an adapted version of the often-used Barratt Impulsiveness Scale (BIS-11) that was designed to assess impulsiveness in research and clinical settings. It has been tailored to fit the aim of the study through reducing the number of items from originally 30 items to a set of 13 items, using a 4-point Likert scale ranging from "Rarely / Never" = 1 to "Almost Always / Always" = 4. High scores indicate high levels of impulsiveness, while low scores indicate low levels of impulsiveness. The factor analysis indicates 4 underlying factors that explain a cumulative variance of 47.3%. Factor 1 explains 15.2% of variance with factor loadings ranging from .12 to .80 and a Cronbach's Alpha of α = .62. Factor 2 explains 14.6% of variance while factor loadings range from .13 to .69 and an Alpha of α = .75 indicates good reliability. Factor 3 has factor loadings ranging from .19 to .75, a Cronbach's Alpha of α = .67 that indicates acceptable reliability and explains 13.4% of variance. Lastly, Factor 4 only has a Cronbach's Alpha of α = .29 that indicates insufficient reliability with factor loadings ranging from .12 to .45 and an explained variance of 4.2%.

3.5 Data Analysis

The survey data was obtained through Qualtrics and after downloading it as a CSV file, it was analyzed using the statistical software RStudio. The dataset was cleaned by removing columns that were not needed during the analysis such as the Start Date and End Date. Furthermore, responses of participants that did not consent to take part of the study, as well as responses that had less than 80% completion were removed. Once the data was cleaned, Likert-scale responses were recoded to numeric values so the analysis could begin. A demographic overview was summarized in a table (Appendix B) to show Age, Gender, Nationality, as well as gaming experience of participants. As a methodological step, a factor analysis, as well as scale analysis to test the scale reliability has been done for each scale separately. To test the hypotheses H1 to H4, a multiple linear regression with purchase

intention as the dependent variable and game enjoyment, game engagement, perceived fairness of monetization practices, risk-taking behavior and impulsiveness was done. To test the moderating effects hypothesized in H5 and H6, a median split variable was created for fairness in H5 and impulsivity in H6. This median split variable split the dataset into a high and low fairness/ impulsivity group. With these groups, two linear regressions per hypothesis were done to be able to see differences between high and low fairness/ impulsivity groups that would then allow to draw conclusions about the moderating effects that these variables have on the relationships of game enjoyment in H5 and game engagement in H6 on purchase intention. With the results of the analysis, it was possible to conclude if the before stated hypotheses were to be rejected or accepted. With the rejection or acceptance of the hypotheses, conclusions were drawn that helped to answer the main research question. Besides the analysis to answer the main hypotheses, an additional analysis was done to help find other potential factors that influence purchase intention but were not included in the main hypotheses. Firstly, correlations between factors were tested and based on the results of the correlations, simple linear regressions were done between past purchases and purchase intention, as well as between past purchases and risk-taking behavior.

4. Results

4.1 Hypothesis testing

To test the previously stated hypotheses H1, H2, H3, H4a and H4b that dealt with the positive correlations that game enjoyment, game engagement, perceived fairness of monetization practices, as well as risk-taking behavior and impulsiveness were assumed to have on purchase intention, a multiple linear regression was conducted. In this regression, purchase intention functioned as the dependent variable while game enjoyment, game engagement, perceived fairness of monetization practices, risk-taking behavior and

impulsiveness took the roles of the independent variables. A multiple linear regression was used because the variables are viewed as being continuous predictors.

The results of the multiple linear regression as a whole proved to be non-significant with $F(5, 37) = 0.592$, $p = .706$. Overall, the model explained 7.4% of variance in purchase intention.

4.1.1 Game Enjoyment

The effect that game engagement has on purchase intention can be described with the estimate $\beta = -.08$, $p = .718$ and shows a weak negative correlation. Since $p > .05$, it can be concluded that H1 is to be rejected as no significant effects between game enjoyment and purchase intention could be found that would describe a positive relationship between the two.

4.1.2 Game Engagement

To describe the correlation between game engagement and purchase intention, the estimate $\beta = -.05$, $p = .738$ is reported. It describes a weak negative relationship between engagement and purchase intention that is deemed insignificant with $p > .05$. Because of these findings, it is concluded that H2 needs to be rejected.

4.1.3 Perceived Fairness of monetization practices

The estimate $\beta = -.12$, $p = .436$ describes a weak negative effect that perceived fairness of monetization practices has on purchase intention. Additionally, the p-value being larger than .05 leads to the conclusion that H3 is to be rejected.

4.1.4 Risk-taking behavior & Impulsiveness

To test the effects that risk-taking behavior and impulsiveness have on purchase intention, the estimates $\beta = .16$, $p = .291$ for risk-taking behavior and $\beta = -.03$, $p = .837$ for

impulsiveness are reported. These effects describe a weak positive correlation between risk-taking behavior and purchase intention, as well as a weak negative correlation between impulsivity and purchase intention. Since $p > .05$ for both effects and therefore insignificant, it is to be concluded that both H4a and H4b are to be rejected.

4.2 Moderation analysis

The following part will focus on hypothesis testing for the moderating effects mentioned in H5 and H6. It was expected that enjoyment has a positive influence on purchase intention with fairness as a moderating variable, whereas engagement has a positive effect on purchase intention with impulsivity as a moderating variable. A median split variable was created for fairness and impulsivity, dividing the dataset into groups with high and low fairness and impulsivity scores, respectively. Furthermore, two linear regressions per hypothesis were performed to compare groups with low and high fairness or impulsivity, allowing conclusions to be drawn.

4.2.1 Enjoyment and Fairness

The first linear regression for the low fairness group proved to be non-significant with $F(1,43) = 1.01$, $p = .320$. The model explained 2.2% of variance on purchase intention. Only taking into account people with low fairness scores, the effect of enjoyment on purchase intention suggests a weak positive relationship that can be described with the estimate $\beta = .14$, $p = .320$. This effect is not statistically significant.

The second linear regression for the high fairness group also proved to be non-significant with $F(1,45) = 0.31$, $p = .575$. The model explained 0.7% of the variance on purchase intention. The effect of enjoyment on purchase intention when taking into account people with high fairness scores suggests a very weak positive relationship that can be described as $\beta = .09$, $p = .576$. This effect is also not statistically significant.

Overall, both models indicate non-significant effects of enjoyment on purchase intention, regardless of high or low scores for fairness. This suggests that fairness does not significantly moderate the relationship between enjoyment and purchase intention which in turn leads to the conclusion that H5 must be rejected.

4.2.2 Engagement and Impulsivity

The model of the first linear regression for the low impulsivity group was non-significant with $F(1,37) = 0.28$, $p = .597$. It explained 0.7% of variance and the effect of engagement on purchase intention suggests a very weak positive relationship when taking into account individuals with low impulsivity and can be described with the estimate $\beta = .08$, $p = .597$. This effect is not significant.

The model for the high impulsivity group was also non-significant with $F(1,45) = 0.07$, $p = .789$. Overall, the model explained 0.1% of variance in purchase intention. The effect that engagement has on purchase intention when taking into account people with high impulsivity scores suggests a very weak negative correlation that can be described as $\beta = -.04$, $p = .789$. This effect is also not statistically significant.

Comparing both models, the non-significant effects of the predictors, as well as the non-significant p-values for the models as a whole suggest that impulsivity does not significantly moderate the relationship between game engagement and purchase intention. Based on these findings, H6 needs to be rejected as no significant effects were found.

Table 1. Hypothesis testing

	Hypothesis	Result
H1	Game enjoyment is positively correlated with purchase intention for microtransactions.	Rejected
H2	Game engagement is positively correlated with purchase intention for microtransactions.	Rejected
H3	Perceptions of fairness regarding microtransactions are positively correlated with purchase intention.	Rejected
H4a/H4b	Higher levels of (a) risk-taking behavior and (b) impulsiveness correlate with increased purchase intention.	Rejected
H5	The relationship between game enjoyment and purchase intention is moderated by perceived fairness of monetization practices. Individuals with higher levels of enjoyment and perceived fairness show increased purchase intention	Rejected
H6	The relationship between game engagement and purchase intention is moderated by impulsiveness, so individuals with higher levels of game engagement and impulsiveness show higher purchase intention.	Rejected

4.3 Additional analysis

Once the main hypotheses were tested, correlations were tested to potentially find significant effects in the sample population that weren't described in H1-H6. Table 2 visualizes correlations between variables in the sample population. Apart from the independent variables that were used for the main hypotheses, MTX.Past was also taken into

account which describes the amount of money players have spent on microtransactions in the past. It has a mean of 43.23 with SD = 120.08. purchase intention has a mean of 2.50 with SD = 1.01. game enjoyment has a mean value of 4.24 and SD = .58 while the mean for game engagement is 3.11 with SD = .79. Perceived fairness of monetization practices has a mean of 4.23 with SD = .55. The mean for risk-taking behavior is 3.30 with SD = .72, and impulsivity has a mean of 2.37 with SD = .29.

Table 2. Correlation matrix

Correlations with confidence intervals

Variable	1	2	3	4	5	6
1. MTX.Past						
2. Intention	.43** [.15, .65]					
3. Enjoyment	.20 [-.11, .47]	-.06 [-.35, .25]				
4. Engagement	-.02 [-.32, .28]	-.12 [-.41, .19]	.04 [-.26, .34]			
5. Fairness	-.11 [-.40, .20]	-.19 [-.47, .11]	.01 [-.29, .31]	.29 [-.01, .55]		
6. Risk	.42** [.13, .64]	.20 [-.10, .48]	.07 [-.24, .36]	-.06 [-.35, .25]	-.24 [-.51, .06]	
7. Impulsivity	.06 [-.24, .36]	-.03 [-.33, .27]	.23 [-.08, .49]	.27 [-.04, .53]	-.10 [-.39, .21]	.09 [-.21, .38]

Note. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2013). * indicates $p < .05$. ** indicates $p < .01$.

Table 2 shows that enjoyment and purchase intention have a weak negative correlation of -.06. Weak negative correlations between purchase intention and other independent variables like engagement (-.12), fairness (-.19) and impulsivity (-.03) can also be reported.

Risk and purchase intention have a small positive correlation of .20. The table also shows that the relationships between the independent variables and purchase intention are reported with $p > .05$ which is deemed as not significant and further backs up the findings of the linear regressions done before and the decision to reject the hypotheses H1-H6.

However, significant relationships between having purchased microtransactions in the past and purchase intention, as well risk-taking behavior can be observed with $p < .01$. There is a strong positive correlation of .43 between having purchased microtransactions in the past and purchase intention. Additionally, the correlation between having purchased microtransactions in the past and risk-taking behavior is strong and positive with .42.

Because of these additional findings, it was decided to conduct two more simple linear regressions to be able to report the effect that having purchased microtransactions in the past has on purchase intention and risk-taking behavior more effectively.

4.3.1 Past purchases and Purchase Intention

Overall, the linear regression of having purchased microtransactions in the past on purchase intention proved to be significant with $F(1,91) = 8.43$, $p = .004$. The model explains 8.4% of variance on purchase intention. The weak positive effect of previous microtransaction purchases on purchase intention can be described with the estimate $\beta = .29$, $p = .004$ and is therefore deemed significant. This leads to conclude that having purchased microtransactions in the past partly explains purchase intention of players in the sample population.

4.3.2 Past purchases and Risk-taking behavior

The linear regression of having purchased microtransactions in the past on risk-taking behavior also proved to be significant with $F(1,45) = 9.12$, $p = 0.004$. The model explains 16.8% of variance on risk-taking behavior. Having purchased microtransactions in the past has a weak positive effect on risk-taking behavior that can be described as $\beta = .33$, $p = .004$. This effect is also deemed significant, and it can be concluded that people who have

purchased microtransactions in the past tend to have a higher propensity for risk-taking behavior.

5. Discussion

This study aimed to assess the possible factors and motivations influencing gamers' willingness to purchase microtransactions in Battle Royale games. More precisely, it was performed to answer the research question "What prior experiences or external factors are associated with higher willingness to spend money on in-game microtransactions within Battle Royale games?". Contrary to the hypothesized relationships, evidence suggests that there are no significant effects that show that game enjoyment, game engagement, perceived fairness of monetization practices, risk-taking behavior or impulsiveness have an influence on purchase intention for microtransactions. Because of these findings, it was concluded that the hypotheses H1 to H6 need to be rejected. These findings were surprising because thinking about it from a non-academic perspective, it would appear reasonable to assume that enjoying a game, being engaged with it, or generally making impulsive or risky decisions could be potential reasons for purchasing microtransactions. Additionally, the findings of this study go against what Bedi et al. (2017) and Wu et al. (2016) have found. Bedi et al. (2017) made the connection that higher enjoyment is one possible antecedent of purchase intention. Wu et al. (2016) on the other hand found that flow and engaging design are contributing factors that correlate with impulse purchases. However, these findings were made in the context of online shopping, which might explain why the results differ in the context of gaming research and microtransaction purchases. Yet, in the context of gaming research, Loa & Berlianto (2022) found that enjoyment partly impacts the willingness to pay for microtransactions. The differences in the findings can be explained since in the study by Loa & Berlianto (2022), the focus was put on a mobile game and the influence on willingness to pay exclusively focused on this game and not on multiple games or genres.

As the findings of this study go against the previously hypothesized assumptions, it leads to the conclusion that there must be other factors influencing purchase intention. Through additional analyses a link between having purchased microtransactions in the past and increased purchase intention, as well as higher propensity for risk-taking has been found. Even though this does not explain why people initially choose to purchase microtransactions, it helps understanding why they continue doing so. Although this study found no connections between the hypothesized variables and purchase intention for microtransactions in Battle Royale games, this does not mean that these relationships don't exist in real life. The reasons behind this and further research limitations may be discussed below.

The results of the study helped to understand the impact that the variables game enjoyment, game engagement, perceived fairness of monetization practices, risk-taking behavior, and impulsiveness have on purchase intention. Previous research has already made a connection between social influences and money spending on microtransactions (King et al., 2020), which is why this study was aimed to fill the gap of determining which factors that don't concern direct social relations have an influence on purchase intention for microtransactions in Battle Royale games among players.

5.1 Academical and practical implications

The study's findings show that there is no clear link between the hypothesized variables and purchase intention for microtransactions, however it does suggest that people who have made in-game purchases before are more likely to make similar purchases again in the future with a higher likelihood to make risky decisions. These findings lead to implications aimed at three different stakeholder groups.

Firstly, given the non-significant findings between game enjoyment, game engagement, perceived fairness of monetization practices, risk-taking behavior, and impulsiveness with purchase intention, researchers should potentially reevaluate the

theoretical frameworks currently in use for finding factors that influence purchase intention for microtransactions in the gaming industry. Despite their intuitive appeal, the variables of this study might not be effective predictors in the context of Battle Royale games. Therefore, alternative variables should be explored in further research. Additionally, more focus should be put on past purchase behavior as this study found a significant link between previous microtransaction purchases and increased purchase intention. For that matter, researchers should investigate the mechanisms behind this relationship, for example habit formations or loyalty programs in order to get a better understanding of what drives gamers to make continuous microtransaction purchases.

Secondly, developers and publishers should focus part of their marketing strategies for microtransactions on existing customers because of the finding that past purchase behavior is a significant predictor for future purchases. Strategies for existing players could include personalized offers, exclusive player-related offers and content or loyalty rewards to maintain an active player base and increase spending. On the other hand, the non-significant findings regarding game enjoyment and game engagement suggest that simply creating a highly enjoyable and engaging game does not guarantee the success of monetization strategies beyond the initial purchase of the game itself. Therefore, developers should also explore other factors and drivers, such as unique in-game experiences, cosmetic aspects not only for player and weapon skins but potentially for a whole interface rework that can be monetized.

Lastly, for governments, gamer groups, and other interested parties concerned about the development of microtransactions and their implications for individual players, the study's findings indicate that impulsiveness and risk-taking behavior do not significantly predict purchase intention for microtransactions in Battle Royale games. Concerns about these games and the impact of microtransactions on spending behavior in new players who have never purchased microtransactions may be less warranted. This can imply that a focus on more restrictions might be better placed elsewhere, although ongoing monitoring of development is

still recommended. However, because a significant correlation was shown between past purchase behavior and growing purchase intention, players' habitual spending patterns should be considered when debating future consumer protection guidelines. These regulations might take the shape of educational initiatives that focus on the psychological aspects of habitual spending, assisting players in making informed choices about their future purchases and understanding the long-term effects of microtransaction spending.

5.2 Research limitations

Contrary to all the recommendations and implications that could be given, the present study has numerous limitations. One limitation would be that the generalizability of the results is limited by the research sample. Because spreading the survey during the data collection process was only done on the social media platform Reddit, it was also limited not only to users of this platform, but more precisely to members of the specific subreddits where the link to the survey was posted in. Additionally, players who are not active on social media were left out of the sample since the data collection process was exclusively conducted online. A broader, larger and more diverse sample for future research can be achieved by not limiting the data collection to one platform, but to spread the survey on other social media platforms, as well as gather participants through promoting the survey in real life game stores to reach people who do not use social media.

Additionally, microtransactions were kept very general in this study, even though there are numerous different kinds. In future studies, it would be interesting to distinguish between different microtransaction types, like weapon or player skins, in-game currency, or battle pass tiers. This would also help to draw clearer conclusions about what impact different types of microtransactions have on gamers' willingness to purchase them which can especially benefit game developers and publishers in researching marketing strategies.

Furthermore, the sample population consisted mostly of male respondents (82%) which could have an influence on the results. If there was a larger number of female respondents, the results may have been different. In this case, for future research it is important to make sure that the sample characteristics, especially gender, are evenly distributed to be able to see differences between male and female respondents more clearly. Having this distinction is also beneficial to find potential gender-specific factors that might influence purchase intention that were not apparent in this study.

6. Conclusion

This study aimed to answer the research question: “What prior experiences or external factors are associated with higher willingness to spend money on in-game microtransactions within Battle Royale games?”. To answer the research questions, an online survey (n = 94) was conducted and to answer the first four hypotheses, a multi linear regression with purchase intention as the dependent variable was conducted and analyzed. The findings suggest that game enjoyment, game engagement, perceived fairness of monetization practices, risk-taking behavior, and impulsivity have no significant effect on purchase intention. Also, contrary to the remaining hypotheses H5 and H6, findings suggest that perceived fairness of monetization practices and impulsivity do not have moderating functions for the relationships of game enjoyment and game engagement with purchase intention. However, the findings indicate that there are significant relationships between past purchase behavior and future purchase intention for microtransactions, as well as risk-taking behavior.

Further research on this topic should focus on obtaining a larger sample population with a more evenly distribution of gender among participants, as well as making a more distinct separation of microtransaction types, rather than generalizing microtransactions as a whole.

To summarize and answer the research question, having purchased microtransactions in the past influences higher willingness to make such purchases again and people who have purchased microtransactions before show a higher propensity for risk-taking behavior. game enjoyment, game engagement, perceived fairness of monetization practices, risk-taking behavior and impulsiveness show no significant relationships that impact the purchase intention for gamers to invest in microtransactions.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-t

Bedi, S. S., Kaur, S., & Lal, A. K. (2017). Understanding web experience and perceived web enjoyment as antecedents of online purchase intention. *Global Business Review*, *18*(2), 465–477. https://doi.org/10.1177/0972150916668614

Bouvier, P., Lavoué, E., & Sehaba, K. (2014). Defining engagement and characterizing engaged-behaviors in digital gaming. *Simulation & Gaming*, *45*(4-5), 491-507. https://doi.org/10.1177/1046878114553571

Breidert, C., Hahsler, M., & Reutterer, T. (2006). A review of methods for measuring willingness-to-pay. *Innovative marketing*, *2*(4).

Brockmyer, J. H., Fox, C. M., Curtiss, K. A., McBroom, E., Burkhart, K. M., Pidruzny, J. N. (2009). The development of the Game Engagement Questionaire: A measure of engagement in video game playing. Journal of Experimental Social Psychology. Vol. 45, pp. 624-634. https://gur.ucsc.edu/instruments

Choi, G., & Kim, M. (2018). Battle Royale game: In search of a new game genre. *International Journal of Culture Technology (IJCT)*, *2*(2), 5.

Cumming, G. (2013). The new statistics. *Psychological Science*, *25*(1), 7–29. https://doi.org/10.1177/0956797613504966

Dougherty, D. M., Mathias, C. W., Marsh-Richard, D. M., Prevette, K. N., Dawes, M. A., Hatzis, E. S., Palmes, G., & Nouvion, S. O. (2009). Impulsivity and clinical symptoms among adolescents with non-suicidal self-injury with or without attempted suicide. *Psychiatry Research*, *169*(1), 22–27. https://doi.org/10.1016/j.psychres.2008.06.011

Ermi, L., & Mäyrä, F. (2005). Fundamental Components of the Gameplay Experience: Analysing Immersion. *DiGRA Conference*, *3*, 15–27. https://people.uta.fi/~tlilma/gameplay_experience.pdf

Gibson, E., Griffiths, M. D., Calado, F., & Harris, A. (2022b). The relationship between videogame micro-transactions and problem gaming and gambling: A systematic review. *Computers in Human Behavior*, *131*, 107219. https://doi.org/10.1016/j.chb.2022.107219

Hogg, M. A. (2016). Social Identity Theory. In *Peace psychology book series* (pp. 3–17). https://doi.org/10.1007/978-3-319-29869-6_1

Igra, V., & Irwin, C. E. (1996). Theories of adolescent Risk-Taking Behavior. In *Issues in clinical child psychology* (pp. 35–51). https://doi.org/10.1007/978-1-4899-0203-0_3

Ivanov, M., Wittenzellner, H., & Wardaszko, M. (2021). Video game monetization mechanisms in Triple A (AAA) video games. In *Lecture notes in computer science* (pp. 389–404). https://doi.org/10.1007/978-3-030-72132-9_33

Jacobs, A. Z., & Wallach, H. (2021). Measurement and fairness. In *Proceedings of the 2021 ACM conference on fairness, accountability, and transparency* (pp. 375-385). https://doi.org/10.1145/3442188.3445901

King, D. L., Russell, A. M., Delfabbro, P. H., & Polisena, D. (2020). Fortnite microtransaction spending was associated with peers' purchasing behaviors but not gaming disorder symptoms. *Addictive Behaviors*, *104*, 106311. https://doi.org/10.1016/j.addbeh.2020.106311

Loa, N. W. J. M., & Berlianto, N. M. P. (2022). Drivers of purchase intention and willingness to pay microtransactions in mobile legends. *Jurnal Manajemen - Fakultas Ekonomi Universitas Tarumanagara/Jurnal Manajemen*, *26*(3), 567–590. https://doi.org/10.24912/jm.v26i3.1022

McCaffrey, M. (2019). The macro problem of microtransactions: The self-regulatory challenges of video game loot boxes. *Business Horizons*, *62*(4), 483–495. https://doi.org/10.1016/j.bushor.2019.03.001

Olsen, J. A., & Smith, R. D. (2001). Theory versus practice: a review of 'willingness-to-pay'in health and health care. *Health economics*, *10*(1), 39-52. https://doi.org/10.1002/1099-1050(200101)10:1<39::AID-HEC563>3.0.CO;2-E

Rayna, T., Striukova, L.: (2014). 'Few to Many': change of business model paradigm in the video game industry *Digiworld* Econ. J. (94)

Rita, P., Guerreiro, J., Ramos, R., & Caetano, R. G. (2024). The role of microtransactions in impulse buying and purchase intention in the video game market. *Entertainment Computing*, 100693. https://doi.org/10.1016/j.entcom.2024.100693

Sherry, J. L. (2004). Flow and media enjoyment. *Communication Theory*, *14*(4), 328–347. https://doi.org/10.1111/j.1468-2885.2004.tb00318.x

Statista. (2024a) *Number of video game users worldwide from 2019 to 2029 (in billions)*. Available at https://www.statista.com/statistics/748044/number-video-gamers-world/

Statista. (2024b) *Digital video game market revenue worldwide from 2017-2027 (in billion U.S. dollars)*. Available at https://www.statista.com/statistics/1344686/global-digital-gaming-revenue/

Warner, R. (1980). Enjoyment. *The philosophical review*, *89*(4), 507-526. https://doi.org/10.2307/2184734

Wertenbroch, K., & Skiera, B. (2002). Measuring consumers' willingness to pay at the point of purchase. *Journal of Marketing Research*, *39*(2), 228–241. https://doi.org/10.1509/jmkr.39.2.228.19086

Wu, I., Chen, K., & Chiu, M. (2016). Defining key drivers of online impulse purchasing: A perspective of both impulse shoppers and system users. *International Journal of*

Information Management, *36*(3), 284–296. https://doi.org/10.1016/j.ijinfomgt.2015.11.015

Zhang, D. C., Highhouse, S., & Nye, C. D. (2018). Development and validation of the general risk taking propensity scale (GRiPS). Journal of Behavioral and Decision Making. https://doi.org/10.1002/bdm.2102

Appendix A

Overview of the sample population and measures

Table 3. Demographic overview

Sociodemographic characteristics of Participants

Sample Characteristics	n	%	M	SD
Age			30.94	9.68
Gender				
Male	77	82		
Female	14	15		
Other	3	3		
Experience				
Casual	6	6		
Intermediate	14	15		
Experienced	43	46		
Expert	31	33		

Note: N=94

Appendix B

Reporting the measures of the study, showing each scale used in the survey with the included items.

Table 4. Demographic Data

Question	Response
Age: What is your age?	Textbox entry
Gender: What is your gender?	- Male - Female - Other, please specify (Textbox entry) - Prefer not to say
Nationality: What country are you from	Dropdown menu with countries to be selected

Table 5. Gaming experience

Question	Response
Experience: How would you explain your level of experience with video games?	- Novice: I am relatively new to playing video games - Casual: I occasionally play video games in my free time but wouldn't consider myself highly experienced - Intermediate: I have moderate experience with video games and play regularly - Experienced: I have extensive experience with video games - Expert: I am highly experienced in playing video games
What is your current favorite Battle Royale Game? Please only put in one game, for example: "Fortnite", or "Apex Legends"	Textbox entry

Table 6. Purchase Intention

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I see microtransactions as an investment in my game.	○	○	○	○	○
I'm likely to spend money on microtransactions in the game mentioned above.	○	○	○	○	○
I use part of my gaming budget for microtransactions in the game mentioned above.	○	○	○	○	○
I intend to spend money on microtransactions in the future on the game mentioned.	○	○	○	○	○
I enjoy playing games that let me purchase things via microtransactions.	○	○	○	○	○
I feel tempted to buy things through microtransactions if they're available for a limited time.	○	○	○	○	○
I feel satisfied when I spend money on microtransactions in the game mentioned above.	○	○	○	○	○
I would rather use my money on microtransactions in games I enjoy than using it to buy new games.	○	○	○	○	○

Table 7. Game Enjoyment

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Playing (Piped text) is pleasurable to me.	○	○	○	○	○
Playing (Piped text) makes me feel happy.	○	○	○	○	○
Playing (Piped text) makes me excited.	○	○	○	○	○
I would choose to play (Piped text) again.	○	○	○	○	○
I feel personally interested in playing (Piped text)	○	○	○	○	○
Playing (Piped text) helps me relax.	○	○	○	○	○
I prefer playing (Piped text) over other games.	○	○	○	○	○

Table 8. Game Engagement

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I lose track of time while playing.	○	○	○	○	○
Things seem to happen automatically while I play.	○	○	○	○	○
The game feels real.	○	○	○	○	○
Time seems to kind of stand still or stop while I play.	○	○	○	○	○
I cannot tell that I'm getting tired while I play.	○	○	○	○	○
I feel like I just can't stop playing.	○	○	○	○	○
My thoughts go fast while I play.	○	○	○	○	○
I lose track of where I am while I play.	○	○	○	○	○
I play without thinking about how to play.	○	○	○	○	○
I play longer than I meant to.	○	○	○	○	○

Table 9. Perceived Fairness of Monetization Practices

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Microtransactions that give players an advantage are unfair to players who don't buy them.	○	○	○	○	○
It is important that microtransactions don't give players gameplay advantages over others.	○	○	○	○	○
I prefer microtransactions that only change the appearance of characters and items.	○	○	○	○	○
Cosmetic microtransactions are acceptable, but ones that effect gameplay are not.	○	○	○	○	○
There should be a way to earn in-game items without spending money.	○	○	○	○	○
Games should reward players who invest time, not just money.	○	○	○	○	○
Alternative ways to earn in-game currency are important for fair gameplay.	○	○	○	○	○
Microtransactions are acceptable if they are balanced with in-game item earning opportunities.	○	○	○	○	○
Knowing that other players can buy advantages through microtransactions affects my enjoyment of the game.	○	○	○	○	○
My gaming enjoyment is reduced when microtransactions are too common in the game I play.	○	○	○	○	○

I often feel pressured to spend money in games with microtransactions.	○	○	○	○	○
Games with many microtransactions seem like they are designed to make me pay more.	○	○	○	○	○
A game should be fully enjoyable without spending extra money on microtransactions.	○	○	○	○	○
Microtransactions should not keep important content or features in a game from players who don't pay.	○	○	○	○	○

Table 10. Risk-taking behavior

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Taking risks makes life more fun.	○	○	○	○	○
My friends would say that I am a risk taker.	○	○	○	○	○
I enjoy taking risks in most aspects of my life.	○	○	○	○	○
I would take a risk even if it meant I might need to face negative consequences.	○	○	○	○	○
Taking risks is an important part of my life.	○	○	○	○	○
I commonly make risky decisions.	○	○	○	○	○
I am a believer of taking chances.	○	○	○	○	○
I am attracted, rather than scared, by risk.	○	○	○	○	○

Table 11. Impulsivity

	Rarely / Never	Occasionally	Often	Almost Always / Always
I plan tasks carefully.	○	○	○	○
I do things without thinking.	○	○	○	○
I make up my mind quickly.	○	○	○	○
I don’t pay attention.	○	○	○	○
I am self-controlled.	○	○	○	○
I concentrate easily.	○	○	○	○
I am good at saving money each month.	○	○	○	○
I am a careful thinker.	○	○	○	○
I say things without thinking.	○	○	○	○
I act on impulse.	○	○	○	○
I buy things on impulse.	○	○	○	○
I spend more than I earn.	○	○	○	○
I am more interested in the present than the future.	○	○	○	○

Appendix C

Reporting the output of the factor analysis done during scale analysis

Table 12. Factor Analysis Intention

Items	Factor 1
Intention_Matrix_1	.54
Intention_Matrix_2	.88
Intention_Matrix_3	.88
Intention_Matrix_4	.92
Intention_Matrix_5	.40
Intention_Matrix_6	.53
Intention_Matrix_7	.69
Intention_Matrix_8	.60
SS Loadings	4.00
Proportion Var	0.50
Cronbach’s Alpha	.88

Table 13. Factor Analysis Enjoyment

Items	Factor 1
Enjoyment_Matrix_1	.82
Enjoyment_Matrix_2	.71
Enjoyment_Matrix_3	.83
Enjoyment_Matrix_4	.86
Enjoyment_Matrix_5	.84
Enjoyment_Matrix_6	.55
Enjoyment_Matrix_7	.75
SS Loadings	4.22
Proportion Var	0.60
Cronbach's Alpha	.89

Table 14. Factor Analysis Engagement

Items	Factor 1	Factor 2
Engagement_Matrix_1	.60	.36
Engagement_Matrix_2	.23	.54
Engagement_Matrix_3	.52	.21
Engagement_Matrix_4	.57	.39
Engagement_Matrix_5	.50	.51
Engagement_Matrix_6	.71	.23
Engagement_Matrix_7	.12	.65
Engagement_Matrix_8	.37	.47
Engagement_Matrix_9	.20	.53
Engagement_Matrix_10	.66	.11
SS Loadings	2.42	1.91
Proportion Var	0.24	0.19
Cumulative Var	0.24	0.43
Cronbach's Alpha	.82	.74

Table 15. Factor Analysis Fairness

Items	Factor 1	Factor 2	Factor 3	Factor 4
Fairness_Matrix_1	.65			
Fairness_Matrix_2	.76			.24
Fairness_Matrix_3	.21			.53
Fairness_Matrix_4	.27			.85
Fairness_Matrix_5		.63		
Fairness_Matrix_6	.21	.89		.18
Fairness_Matrix_7		.55	.18	
Fairness_Matrix_8		.22		.32
Fairness_Matrix_9	.50		.24	
Fairness_Matrix_10	.43	.16	.55	
Fairness_Matrix_11		.16	.83	.20
Fairness_Matrix_12	.14		.54	
Fairness_Matrix_13	.58	.45		.22
Fairness_Matrix_14	.55	.18		.21
SS Loadings	2.32	1.86	1.41	1.37
Proportion Var	0.16	0.13	0.10	0.09
Cumulative Var	0.16	0.29	0.40	0.49
Cronbach’s Alpha	.73	.72	.67	.59

Table 16. Factor Analysis Risk

Items	Factor 1
Risk_Matrix_1	.66
Risk_Matrix_2	.77
Risk_Matrix_3	.85
Risk_Matrix_4	.75
Risk_Matrix_5	.56
Risk_Matrix_6	.69
Risk_Matrix_7	.59
Risk_Matrix_8	.79
SS Loadings	4.13
Proportion Var	0.51
Cronbach's Alpha	.89

Table 17. Factor Analysis Impulsivity

Items	Factor 1	Factor 2	Factor 3	Factor 4
Impulsivity_Matrix_1			.75	
Impulsivity_Matrix_2	.61	.15	.28	.22
Impulsivity_Matrix_3				.45
Impulsivity_Matrix_4	.80			-.13
Impulsivity_Matrix_5		.30	.54	-.11
Impulsivity_Matrix_6	.33	.20	.36	
Impulsivity_Matrix_7		.67	.47	
Impulsivity_Matrix_8	.12	.26	.56	
Impulsivity_Matrix_9	.50	.17		
Impulsivity_Matrix_10	.57	.47	.25	.34
Impulsivity_Matrix_11	.27	.66		.12
Impulsivity_Matrix_12	.27	.69	.19	-.31
Impulsivity_Matrix_13	.23	.13		
SS Loadings	1.97	1.89	1.74	0.54
Proportion Var	0.15	0.14	0.13	0.04
Cumulative Var	0.15	0.29	0.43	0.47
Cronbach’s Alpha	.62	.75	.67	.29

Appendix D

Reporting the output of the multiple linear regression analysis that was done to answer the Hypotheses H1, H2, H3, H4a, and H4b.

Table 18. Multiple Linear Regression Analysis

Variable	β	SE	t	p
(Intercept)	.12	.17	.69	.489
Enjoyment	-.08	.22	-.36	.717
Engagement	-.05	.17	-.33	.737
Fairness	-.12	.16	-.78	.436
Risk	.16	.15	1.07	.290
Impulsivity	-.03	.16	-.20	.837

Note. Total N = 94. β = standardized regression coefficient (Beta); SE = Standard Error