UNIVERSITY OF TURKU
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The Consumer Psychology of Microtransactions in Free-to-Play Games

The behavioural economics perspective

International Business

Bachelor's thesis

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The swiftly growing, lucrative and yet unmature industry of video games has seen significant shifts in revenue generation strategies trough the recent decades. Especially the recent mass shift to the free-to-play model has brought with it various new, complex and unexplored monetization forms that ought to be studied extensively. This thesis examines the role of behavioural economics in these enigmatic microtransactions in free-to-play games, integrating relevant theories such as prospect theory and social proof. The thesis begins by exploring the historical context of free-to-play games and proceeds by defining the current state of the market and its most influential monetization forms such as loot boxes and the battle pass. After presenting the various theories of behavioural economics, the study integrates them into the context of free-to-play monetization forms. Through structured analysis of these monetization forms, the thesis uncovers the depth of the psychological fallacies related to consuming in these virtual environments. This thesis found various links between the discussed theories and microtransactions and uncovered certain ethically questionable psychological fallacies in play. Ultimately the thesis contributes to a deeper understanding on this form of virtual consumption, shedding light on the matter through frameworks of behavioural economics, benefitting consumers, managers, parents and academics alike.

Key words: video games, virtual consumption, microtransactions, behavioural economics, consumer psychology, purchase behaviour, battle pass, loot box, prospect theory, social proof.

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Nopeasti kasvava, tuottoisa mutta vielä kypsymätön videopeliteollisuus on kokenut merkittäviä muutoksia ansaintamalleissaan viime vuosikymmenten aikana. Erityisesti viimeaikainen laajamittainen siirtymä ilmaispelimalliin on tuonut mukanaan uusia, monimutkaisia ja osin tutkimattomia kaupallistamisen muotoja, joita on syytä tutkia perusteellisesti. Tämä kanditutkielma tarkastelee käyttäytymistaloustieteen roolia näissä osalti arvoituksellisissa ilmaispelien mikrotransaktiomalleissa. Tutkielma hyödyntää relevantteja teorioita, kuten prospektiteoriaa ja sosiaalista todisteisuutta. Tutkielma alkaa tarkastelemalla ilmaispelien historiallista kontekstia ja etenee määrittelemään markkinoiden nykytilan sekä sen merkittävimmät kaupallistamisen muodot, kuten ”loot boxes” ja ”the battle pass”. Käyttäytymistaloustieteen eri teorioiden esittelyn jälkeen teoriat integroidaan ilmaispelien kaupallistamismuotojen kontekstiin. Rakenteellisen analyysin avulla tutkielma tuo esiin näihin virtuaalisiin ympäristöihin liittyvien kulutustottumusten psykologisten vinoumien syvyyden. Tutkielma löysi useita yhteyksiä käsiteltyjen teorioiden ja mikromaksujen välillä ja paljasti tiettyjä eettisesti kyseenalaisia psykologisia vinoumia. Kaiken kaikkiaan tutkielma syventää ymmärrystä tästä virtuaalisesta kulutusmuodosta valaisten ilmiötä käyttäytymistaloustieteen viitekehysten kautta ja tarjoten hyötyä niin kuluttajille, johtajille, vanhemmille kuin akateemiselle tutkimukselleki.

Avainsanat: videopelit, virtuaalinen kuluttaminen, mikrotransaktiot, käyttäytymistaloustiede, kuluttajapsykologia, ostokäyttäytyminen, battle pass, loot box, prospektiteoria, sosiaalinen todisteisuus.

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1 Introduction

In the last few decades, the video game industry has seen massive growth and is one of the fastest growing industries of today (Ivanov et al., 2021, p. 390). In fact, today it generates more revenue than music and movies combined. With an estimated industry revenue of approximately $300 billion in the year 2025, the industry will have grown over a $100 billion (30%) in the last 5 years alone (Rivet, 2022, p. 8).

With the video gaming industry being relatively unmature, it has seen massive shifts in its revenue generation strategies (Ivanov et al., 2021, p. 390). For a long time in the 1990s and early 2000s, premium games would make money by selling copies for an industry-standard price of $50-80 (Zendle et al., 2020, pp. 1–2; Steam Store, 2024; Ivanov et al., 2021, p. 390). In the early 2000s the revenue models of the gaming industry started shifting. These traditional pay-and-play premium games started implementing small in-game purchases. These purchases are known as microtransactions. (Zendle et al., 2020, p. 2.)

Throughout the 2010s video games like League of Legends innovated with a completely free-to-play model. Players could download and play these games for no upfront cost at all, and these games relied on revenue solely through in-game purchases. The industry took leaps forward yet again in the late 2010s with the rise of the "battle royale" game genre. Games like PUBG, Fortnite and Warzone all launched with the free-to-play model further optimizing in game spending with the use of the new "battle pass" that tied in game progress, scarcity of time and player spending together. In 2019 80% of all video game revenue came from free-to-play games (*SuperData, 2020* p. 6)**.**

With such high growth potential and yet-to-be-optimized revenue models, study of this field is essential to achieve sustainable growth in this evolving market. At the very core of these paradigm shifts in game monetization, it is of paramount importance to understand why and how consumers act in digital environments and what product strategies multinational video game companies utilize in optimizing the consumption of microtransactions, without breaking the subtle ethical boundaries of this field.

This thesis aims to examine the most influential cutting-edge monetization forms used in video games and how certain theories of behavioural economics such as "social proof" and "prospect theory" link to these monetization forms, discreetly driving spending in these digital economies. In the book Behavioural economics, Mallard (2017, p. 1) states that this field sets out to "out to

explore human behaviour in all its scope and strangeness" and that it seeks to "understand the forces that govern the decisions we make" Evidence suggests that in virtual environments consumers tend to act increasingly irrationally (Frantz et al., 2016, pp. 252–253), hence the theories of prospect theory and social proof were chosen, as they excel in explaining the irrationality of consumers (N. C. Barberis, 2013, p. 173; Miller, 1984, p. 972). Additional evidence points to an increase in peer influence in today's increasingly advanced digital environments, further increasing the relevance of social proof (Shin, 2008, p. 442).

Both the economics of free-to-play video games and behavioral economics have been studied extensively, however research combining the subjects is scarce. There is no current research linking behavioral economics to the latest revenue-generation strategies used in the video game industry. A study on the purchasing patterns of virtual goods in an online social game mentions that future studies should aim to "provide more insight into why players engage in certain spending patterns or what elements of social interaction influence different types of spending."(Wohn, 2014, p. 3367.)

This thesis intends to shed light on the psychological triggers that nudge consumers to spend hundreds of billions on virtual products, many of which seem to have a very abstract value. Understanding of these virtual products is quite scarce within the field of business, thus this thesis aims to enlighten readers on these relatively complex commodities. Additionally, to further decipher this phenomenon, the thesis examines consumer and industry expert attitudes towards the examined monetization forms as it draws correlation between these attitudes and psychological factors that are linked to these monetization forms. For clarification, the main question examined in this thesis is **How do behavioural economics affect microtransactions in free-to-play games**? To answer this, the thesis examines the following two subsections:

- What are the most relevant monetization forms in free-to-play games?
- What are the most relevant theories of behavioural economics in this context?

2 Monetization forms in free-to-play games

2.1 Digitalization and the rise of free-to-play games

Before the 7th generation of game consoles in 2005 nearly all video games had to be printed into CDs that were then sold at physical stores. Digitalization removed a big chunk of video game manufacturing costs by making it possible to purchase and download games online. (Bernevega & Gekker, 2022, pp. 48–52.) The percentage of digital game sales has since rocketed from 20% in 2009 to 83% in 2018 (*Statista*, 2019). The switch to a digital format expanded the possibilities for pricing strategies immensely.

An additional factor that played a role in the formation of the free-to-play models is the rise of piracy. When piracy is present in the application software market, pricing strategies such as skimming ("a pricing strategy in which a firm charges a high initial price and then gradually lowers the price to attract more price-sensitive customers." (*Corporate Finance Institute*)) cannot be utilized optimally. Instead, Mesbah (2017, p. 18) concluded that the optimal way to fight piracy is to appropriately reduce the cost of the product. The study found that the higher the price, the more piracy occurs, thus, paving the way for the free-to-play model that takes price elasticity out of the equation and focuses on maximizing player base.

Furthermore, digitalization allowed for innovation in payment methods. Online payments and virtual currencies became another major stepping stone in the success of free-to-play games. In modern games nearly all microtransactions are made with virtual currencies, which are in themselves also defined as microtransactions, since they are bought in-game with real currency. The European Central Bank defines these currencies as "a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community" (European Central Bank, 2012, p. 6).

2.2 Free-to-play versus pay-to-win

Most microtransactions allow the players to gain access to cosmetics such as decorations or different outfits for their character. For instance, in the hugely popular multiplayer battle royal game Fortnite, players can acquire fancy outfits, or dance emotes to express themselves in-game. These microtransactions are purely cosmetic and do not aid in progression and gameplay. These microtransactions are called "cosmetic microtransactions" (Zendle et al., 2020, p. 2). However, not all microtransactions are built the same. Some in-game purchases allow the player to gain a

concrete advantage (Zendle et al., 2020, p. 2). For example, in the football game FIFA, players can purchase player packs with real money, enabling them to unlock and play with stronger players. These so-called pay-to-win microtransactions are especially problematic in multiplayer games where players who are not in the position to spend money, may feel cheated since player skill can easily be overshadowed by bought advantages.

Pay-to-win models have not become the industry standard due to strong consumer backlash. When one of the industry leaders Electronic Arts (EA) launched the highly anticipated game Star Wars Battlefront 2 in late 2017, players were quick to unite against the company for incorporating strong pay-to-win microtransactions into an already costly $40 multiplayer premium game. Due to the community uproar, a boycott by the consumers, and legislative pressure EA ended up withdrawing the pay-to-win revenue model from the game completely. (McCaffrey, 2019, p. 484.) This was a big win for the consumers, discouraging other game companies from engaging in similar monetization forms and further cementing the fair free-to-play model based on cosmetic microtransactions. Despite negative consumer attitudes towards it pay-to-win still exists in a plethora of games, especially in the more casual-gaming-oriented world of mobile games.

In today's video game market, the battle pass (discussed in chapter 2.3) together with loot boxes (discussed in chapter 2.4) are the dominant form of monetization in free-to-play games. Games often include side products in the form of singular cosmetic purchases or bundles, but despite the lack of data shared by game companies, it is expected that for most free-to-play games in the market, the bulk of the money is to come from one or both, of these core products.

2.3 Seasonal battle pass

Battle passes are a seasonal (3-4 months) progression-based monetization approach that rewards the player for both playing and progressing in the game as well as purchasing microtransactions. Battle passes are usually priced around $10 and include rewards such as cosmetics, experience boosts that enable faster progress, and loot boxes (discussed in the following chapter). Most commonly battle passes include an additional free tier in which the player can still unlock some of the smaller rewards by progressing within the pass.

Battle passes are the new wave in free-to-play monetization, combining a multitude of other microtransaction types like cosmetics and loot boxes. Games featuring a battle pass such as Fortnite, PlayerUnknown's Battlegrounds, Dota2 and Counter-Strike: Global Offensive, were all

ranked within the top ten of PC and console games in digital revenue. Joseph (2021, p. 69) states that this success is a testament to the popularity of the free-to-play business model.

2.4 Loot boxes

Loot boxes as defined by Daniel Joseph (2021, p. 69) are "digital objects that, when purchased, are opened and give players opportunities to access digital items through a mechanism similar to a slot machine". Loot boxes are perhaps one of the most lucrative as well as controversial things that have come out of the gaming industry in the past decade. Some sources estimate that loot boxes have generated close to $30 billion in the year 2018 alone (Zendle et al., 2020, p. 3).

However, the concept of "gambling" for virtual goods is seen by some as predatory and unethical especially as a large portion of the consumer base consists of children and young adults. Loot box spending has time and time over been linked to gambling problems, whilst it is still unclear whether loot box spending encourages gambling problems or vice versa, the push for legislation on the issue has been strong in recent years (Zendle et al., 2020; Zendle et al., 2019; Zendle & Cairns, 2018; Zendle & Cairns, 2019).

2.5 Legal background

Among the first to act on loot boxes even before major public debate were countries like Japan, the Philippines, and Australia, setting the standard for tight regulation for this commodity (Schwiddessen & Karius, 2018, p. 20). In 2020 the EU Internal Market and Consumer Protection Committee report (2020) stated regulation of loot boxes should be enforced through already existing consumer protection laws relating to game design. In recent years EU countries such as the Netherlands, Belgium, and Slovakia have taken dramatic action. In these countries loot boxes are legislated as gambling (*Simmons & Simmons*, 2023). A later EU parliament report on Consumer protection in online video games brought up a lot of the same concerns in 2023 but there was no definitive legislative solution. (The European Parliament, 2023). In the same year, Germany's video game age rating body began considering microtransactions types such as loot boxes in the age rating process of games (*Simmons & Simmons*, 2023).

In 2013 a class action lawsuit was filed against Apple by the Federal Trade Commission (FTC) for multiple cases of children purchasing microtransactions without their parents' consent. Apple was ultimately ruled to refund $32.5 million to consumers affected by this. (Melzer et al., 2021.) In 2020 Apple got into legal trouble again for promoting games with loot box content to children that were

deemed as gambling in the state of California (*Patently Apple*, 2021). Due to this lawsuit, Apple was forced to change its policy and demand that the game developers disclose probabilities for each loot box award (Melzer et al., 2021).

3 Behavioural economics

3.1 Prospect theory

Daniel Kahneman's and Amos Tversky's Prospect theory (1979) is the most influential theoretical perspective to understanding decision-making and risk-taking from a consumer point of view. With their paper Kahneman and Tversky demonstrated flaws in the status quo theory at the time, "the expected utility theory" (Bernoulli, 1738 in Stearns, 2000) which relies on the rationality of consumers. Previous research has found that prospect theory beats various alternative theories for decision-making under uncertainty and even considers it the greatest descriptive theory of ambiguity currently available (Kothiyal et al., 2014). With prospect theory Kahneman and Tversky demonstrated multiple psychological fallacies that factor into the risk-taking of consumers. In his literature review of the matter, spanning over 30 years N.C Barberis (2013. p. 175) dissects the four key elements of prospect theory as 1) reference dependence, 2) loss aversion, 3) diminishing sensitivity, and 4) probability weighting.

Reference dependence relates to the finding that people experience change only in relation to a set baseline or reference. Outcomes that exceed or subceed this baseline are given an irrational amount of weight when measuring wins and losses. An important example of reference dependence is the endowment effect. The endowment effect refers to the finding that people value things more if they own them. In this case, ownership is the baseline, and wins or losses are related to this status. (Thaler, 1980, p. 44; Kahneman et al., 1990.)

Loss aversion refers to the observation that overall people are more sensitive to losses than to gains of the same magnitude. A classic example of this is the test that shows that most people would not risk $100 even with a 50% to gain an additional $110 (N.C Barberis 2013. p. 175). The popular term FOMO "Fear of missing out" gets its roots from loss aversion and stems from another powerful decision-making bias, regret aversion. Where prospect theory assumes that the expected utility of a choice is based on the pleasure or pain of the outcome, regret aversion or "regret theory" adds the dimension of feelings evoked by the outcomes of rejected options. Regret aversion assumes that individuals anticipate emotional consequences like regret and compare outcomes of decisions with what could have been. Individuals tend to place an irrationally high meaning on the later disappointment in not having taken a certain risk (Zeelenberg et al., 1996). These concepts are very similar in nature and are key factors in, for instance, excessive gambling behaviour. These theories also exhibit meaningful ties into the well-known sunk cost fallacy, defined as an effect that

is “manifested in a greater tendency to continue an endeavour once an investment in money, effort, or time has been made” (Arkes & Blumer, 1985, p. 124).

Loss aversion and reference dependence also exhibit strong links to scarcity bias. Verhallen (1982, p. 299) states that “Scarcity is a central concept in economics. It is in fact part of the definition of economics. The scarcity of means and goods sets the boundaries of economic science.” In economics, scarcity is seen as a driver of value. A message of scarcity creates a situation where “consumers can only lose the opportunity to purchase a product; they cannot gain 'more availability'” (Cremer & Loebbecke, 2021, p. 2). Scarcity creates loss as a potential outcome which according to prospect theory, drives risk averse consumption (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992).

Diminishing sensitivity demonstrates that the impact of a change diminishes as the fixed change is applied to a smaller price point. The impact of increasing a gain from $50 to $100 is much larger than increasing a gain of $1000 by the same amount to $1050. Over time our sensitivity to gaining or losing diminishes. As an example, after already making a $20 purchase a $5 purchase does not have as large of an impact as it would have on its own. Diminishing sensitivity also demonstrates that people are more likely to take risks in the context of losses. In most cases, people prefer a certain gain of $500 to 50% of $1000, yet a 50% chance of losing $1000 is typically preferred to the alternative of losing $500 for certain. (N.C Barberis 2013. p. 175.) The following figure, inspired by Kahneman’s & Tversky’s (1979, p. 279) original value function augmented by adding elements in colour, depicts these first three elements of prospect theory.

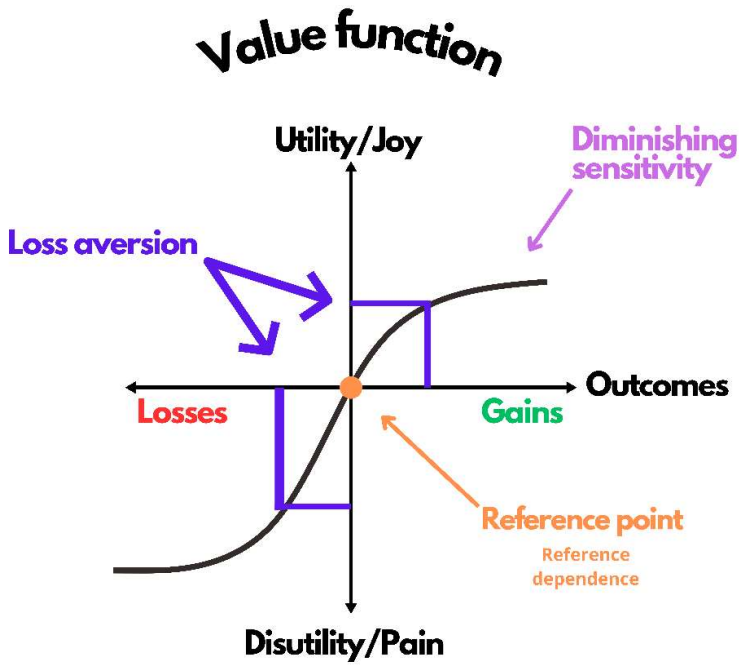

Figure 1 Value function (augmented from Kahneman & Tversky 1979, p. 279)

Probability weighing describes how individuals' overweight events of low probability while underweighting the vice versa. Individuals prefer a 0.001 chance of $5,000 to a certain gain of $5, but also prefer a certain loss of $5 to a 0.001 chance of losing $5,000. Hence, lotteries and insurance are extremely popular. (N. C. Barberis, 2013, p. 177.) Probability weighting is illustrated in figure 2 with a augmented (text and graph simplified and explanations added) version of the probability weighting function (Kahneman & Tversky, 1979, p. 283).

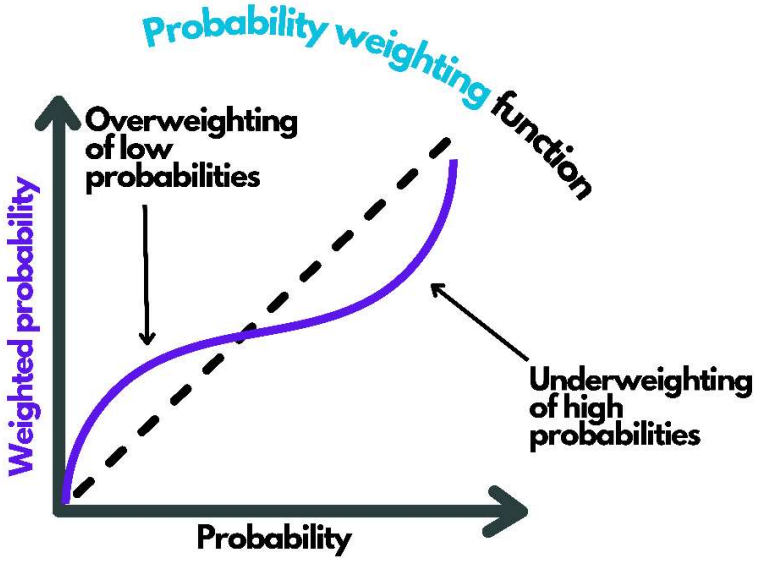

Figure 2 Probability weighting function simplified (augmented from Kahneman & Tversky, 1979, p. 283)

In their examination of prospect theory's weighting functions Rottenstreich & Hsee (2001, p. 189) proved that affective values play a big role in consumption. The pair discovered that when emotions are particularly powerful, individuals tend to focus on the outcome and not the probability of it happening. These findings can be linked to another well-known psychological bias called the Gamblers fallacy, also known as the Monte Carlo fallacy. This fallacy refers to the irrational assumption of a streak ending without regard for the actual chance of this happening (Tune, 1964). The gambler's fallacy also draws correlation to prospect theory as reference dependence states that individuals exhibit judgment based on past experiences that form a baseline (N.C Barberis, 2013, p. 175). In roulette, for example, individuals will often overweight the chance of a streak of 10 reds to end as it only seems logical according to their past reference.

3.2 Social proof and risk preference

According to the psychological principle of social proof, individuals often make decisions based on how others act and especially on how similar others act. (Cialdini et al., 1999, p. 1243; Miller, 1984, p. 972) This phenomenon aims to distinguish how the networks around us affect decision-making. Like many other factors, social proof firmly affects how risks are taken and perceived. According to Jani (2021, p. 1271) individuals exhibit increasingly risk-averse behaviour if they perceive themselves in a loss situation compared to other individuals or groups. (Jani, 2021, p. 1271) This

principle links to reference dependence, in that, individuals tend to base their reference or baseline in relation to their peers.

A study by Wohn (2014, p. 8) on the purchasing patterns of virtual goods in an online social game found that factors such as time spent playing or earning virtual currency in-game had no effect on the purchasing likelihood of players, whereas having more in-game friends and virtual gift giving were the most influential variables affecting the spending of real money in the game. Adding to this, another study proves that in groups with strong social capital, young adults are more likely to engage in group-related consumption (Li et al., 2023, p. 31).

3.3 Summary of theories and fallacies linked to consumer decision making

To better understand the correlations of the theories and fallacies mentioned in chapter 3, figure 3 demonstrates the links found between them. The links illustrated in figure 3 are based on the literature reviewed and therefore are not completely exhaustive.

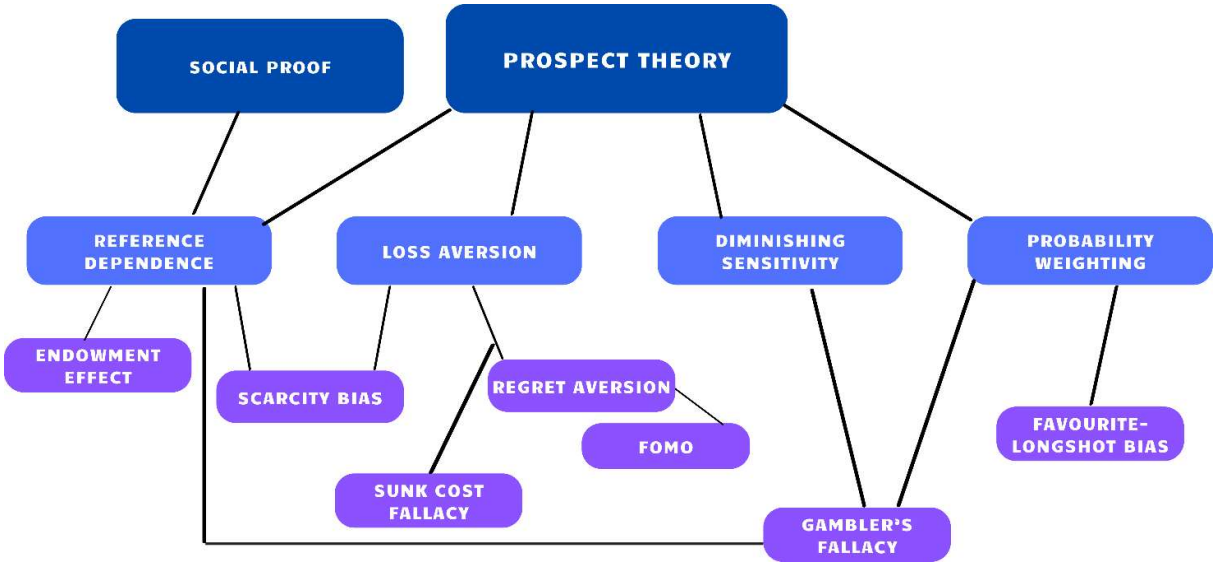

Figure 3 Psychological theories and fallacies linked to consumer decision making

These theories and fallacies are utilized in the following chapter to analyze the behavioural factors that drive consumption of virtual products like loot boxes and the battle pass.

4 Behavioural economics in monetization forms of free-to-play games

4.1 Reference dependence

According to reference dependence, consumers look back at past experiences and personal baselines when evaluating a purchase. The complex networks of digital currencies used in video games make it considerably harder for consumers to hold on to their personal spending tendencies as purchases are made through in-game currencies that differ in value from game to game. In her study Uddin (2021, p. 875) argues that in-game currencies are the video game equivalent to casino chips, in that their purpose is to make financial cost an abstraction and make consumers spend more by skewing their sense value. This can be especially effective on young consumers like children since their understanding of money and value is often lacking (Trzcińska & Sekścińska, 2016, pp. 6–7) and they exhibit impulse buying behaviour more frequently than older consumers (Araujo et al., 2018, p. 193).

Daniel Joseph, the author of Battle Pass Capitalism links the increased use of digital currencies back to Karl Marx's Fetishism of commodities: "I believe that in a sense what we are seeing here is the obfuscation of consumption writ large: where consumerism is relegated to immense digital theme parks that pass money through a series of shunts that transform currency into company scrip, further abstracting the commodity fetish relation Marx (1867/1990)." (Joseph, 2021, p. 81)

The endowment effect which stems from reference dependence can without doubt be linked to the success of the battle pass. Since most battle pass systems operate with a free tier that allows players to progress through the tiers, players will eventually start to notice how many awards they have earned with their progress. The catch is that most of these prizes are locked behind the microtransactions of the battle pass. This situation sets a precedent where in a sense the players already "own" the awards. In other words, the baseline from the player's perspective is ownership of the item, thus it can be argued that the purchase decision is skewed since the player views not unlocking the battle pass as a loss of the awards, as opposed to a neutral event.

4.2 Loss Aversion

In the battle pass, many of the principles of loss aversion are present. Stemming from regret aversion, the sunk cost fallacy and FOMO are major psychological triggers within the battle pass system. Since the player's progress and performance are directly linked to the amount and rarity of their battle pass rewards, it can be viewed as a major sunk cost of time and effort spent to not

purchase the battle pass. Furthermore, the seasonal nature of this system amplifies the effects of regret aversion, FOMO, and scarcity; Consumers can only lose the opportunity to purchase a product; they cannot gain "more availability" (Verhallen, 1982, p. 299). This also holds up on limited-time loot box rewards. The value of these cosmetic rewards can be largely subjective and therefore explained through psychological concepts like scarcity bias.

The psychological effects behind the sunk cost fallacy have deep impacts on both consuming and spending time playing video games since just as hours of playtime can be viewed as a sunk cost if a player doesn't pay and unlock the awards, the same can be applied to a player who has bought the battle pass or a skin and may feel that the purchase goes to waste in the case that they do not continue playing the game.

4.3 Diminishing sensitivity

Diminishing sensitivity adds value to explaining repeat in-game purchases. In a sample of 5,000 French gamers, only 26.1% reported spending money in-game (Costes & Bonnaire, 2022, p. 3). According to other articles, approximately 10% of players ("Whales") account for 50% of a free-to-play game's revenue (Shi et al., 2015, p. 178; Lovell, 2011). This wide spread in the Average Revenue Per Paying User (ARPPU) in free-to-play games can partly be attributed to the effects of diminishing sensitivity on repeat purchasing behaviour.

Applying the principles of diminishing sensitivity, a $5 loot box or a $10 battle pass does not feel as big of a purchase if the player has already spent $20 in-game prior to evaluating this purchase decision. Furthermore, diminishing sensitivity adds to the context of regret aversion as it states that people are less risk-averse in the context of losses; in the environment of free-to-play games, losses like the rewards of a seasonally expiring battle pass or limited-time rewards from loot boxes.

4.4 Probability weighting

Probability weighting helps shed light on some of the increasingly controversial parts of game monetization, as it has time and time again been used to explain the psychology behind gambling (N. Barberis, 2009; Qiu, 2012; Kyonka & Schutte, 2018). Snowberg and Wolfers (2010, p. 724) demonstrate that probability weighting explains one of the most impactful betting anomalies, the "favourite-longshot bias," longshots in horse races have market odds that dramatically exaggerate their chances of winning.

As probability weighting demonstrates, individuals often overestimate their chances of winning a rare longshot reward from a loot box. After purchasing these loot boxes either through in-game currency earned through progress or bought with real money, the gambler's fallacy comes into play and players may go on spending sprees just like is seen in real-life gambling environments.

Barberis (2013, p.177) attributed probability weighting as a factor in the undeniable success of lotteries and insurance. Modern free-to-play games capitalize on this psychological fallacy by offering both. Insurance in the form of limited-time microtransactions that allow the player the option to avoid losing a reward and lotteries in the form of loot boxes.

4.5 Social proof

As is in all decision-making and purchasing behaviour, the influence of peers is massive. Shin's (2008, p. 442) findings show that the impact of peers (subjective norm) on purchase intention in a virtual economy was much greater than previous studies on the topic indicated. He argues that in an increasingly connected digital environment, individuals rely more and more on comparison to others when making decisions. This is attributed to electronic word-of-mouth (EWOM), which stems from the rapidly improving information networks of digital societies (Park & Lee, 2009, pp. 61–62). Li (2023, p. 31) demonstrated in his study that in groups with strong social capital individuals are more likely to cave in to purchasing. With the aforementioned findings of peer impact in digital environments, it can be assumed that online multiplayer video game environments, often played with groups of 2-4 players and against up to hundreds of players at a time, are very often ones with strong social capital. In real life a trending shoe inside a friend group or a society experiences massive growth in sales, likewise in video games a cosmetic that is popular amongst teammates and enemies alike is going to gain significant traction. Shin also gives a particularly relevant example in stating that: "users may strongly want to use Avatar (an electronic image that represents and is manipulated by a computer user as in a computer game) because they desire to gain acceptance from the external reference group and are already assimilated to the group norm" (Shin, 2008, p. 437).

Frantz (2016, p. 252-253) mentions EWOM as a contributing factor to information overload in digital environments. He also states that "we have reasons to believe that the information overload issue can be severer in the modern digital societies" affecting consumption in a multitude of ways, ultimately making it increasingly irrational and more difficult to understand in full. Frantz concludes on the topic by stating that "In this regard, one can expect an increasing relevance of behavioural economics in the digital society." Regarding word-of-mouth, consumers are far more

likely to share their positive experiences (Sitel Group, 2018, p. 12). This is a major selling point for loot boxes, as social media channels like YouTube and Twitch are filled with loot box openings that highlight the very best wins. These loot box wins attract more viewers and engagement, which is why losses or mediocre awards are rarely shared online. This type of content sets an unrealistic baseline which skews with the reference dependence of consumers ultimately making them more likely to purchase a loot box.

4.6 Industry expert and consumer attitudes towards monetization forms

In a study conducted among industry experts regarding different forms of free-to-play monetization, loot boxes were identified as one of the features that were seen as worse than others, due to their resemblance to gambling (Melzer et al., 2021, p. 271). Another study focusing on consumer attitudes towards loot boxes found that the majority of attitudes were either indifferent or negative. Additionally, pay-to-win aspects in loot boxes were viewed more negatively than purely cosmetic-based loot boxes. (Hodge et al., 2022, p. 10.) This corresponds with the prior case example of pay-to-win loot boxing in Star Wars Battlefront 2 and the negative consumer attitudes toward the game (McCaffrey, 2019, p. 484).

Among experts Battle passes and cosmetics were seen as mostly positive since they have minimal impact on the gameplay while giving the opportunity to expand the gaming experience (Melzer et al., 2021, p. 270). Likewise, Zendle (2020, p. 3) stated that players, academics, and even some game developers, all shared a negative view of pay-to-win features. However, in Melzer's study, a psychologist & creative director viewed the battle pass as one of the worst features due to the purchase pressure that it creates especially for children (Melzer et al., 2021, p. 271). This view correlates with our findings on the loss aversion and reference dependence regarding the battle pass system, in addition to bearing resemblance to the findings that young people are more affected by social pressure in groups of strong social capital (Li et al., 2023, p. 31) and more inclined towards impulse buying behaviour (Araujo et al., 2018, p. 193).

Industry experts also deemed the use the use of in-game virtual currency as unsuitable for children as it may lead to hazy apprehension of the actual amount of money spent. Uddin (2021, p. 875) argued the same in her study, even stating that "Virtual currencies are designed to make adolescents lose a sense of how much they spend on loot boxes". This also conforms with the findings of young consumers lacking monetary understanding (Trzcińska & Sekścińska, 2016, pp. 6–7).

5 Conclusions

This thesis examined how certain psychological triggers of behavioural economics drive spending of virtual products in video games. Various links were found connecting concepts of prospect theory and social proof to the consumption of microtransactions such as battle passes and loot boxes. This thesis was able to distinguish a multitude of ways in which well-known psychological fallacies affect purchase intention of the examined forms of microtransactions. Moreover, to further understand these commodities, the thesis examined consumer and industry expert attitudes towards different monetization forms, drawing correlations between the attitudes and the psychological factors linked to these monetization forms.

This examination indicates that just as is in consumption in the real world, psychological factors play a massive role in virtual purchasing and even purchasing patterns as complex as the ones inspected can be explained through relevant psychological theories. This thesis contributes to existing theory by highlighting findings indicating that consumers are likely to act increasingly irrationally and asymmetrically in virtual environments due to factors such as virtual peer influence and the complexity of cutting-edge virtual products. Furthermore, this thesis contributes to the fields of video games and behavioural economics by adding the theoretical perspectives of prospect theory and social proof to modern virtual products.

With this added psychological context, the thesis contributes to a deeper understanding of this enigmatic, new, and expanding form of virtual consumption, benefiting consumers, managers, and academics alike. Through this study, managers can acquire especially beneficial comprehension of consumer attitudes and ethical pitfalls relating to the discussed forms of microtransactions, aiding in the optimization of this yet-evolving field. The exhibits of this thesis are also highly relevant to parents, as it is crucial for them to understand the psychological fallacies and potentially dangerous elements of the microtransactions their children interact with.

Despite the swiftly growing economy of microtransactions, the research on this topic is relatively scarce and the majority of it is focused on the macro- as opposed to microeconomics such as purchasing behavior. Studies from this viewpoint are limited by the difficulty in acquiring large enough data sets since major game companies have been reluctant to disclose this data. (Wohn, 2014, pp. 3359, 3367.) Further research on this topic is needed in order to fully grasp the intricacies of this rapidly growing elaborate form of consumption. Empirical studies of large data sets are to be especially helpful in understanding consumer behavior in these virtual environments.

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