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**ELEMENTS OF GAMBLING IN VIDEO GAME
MICROTRANSACTIONS - LOOT BOXES**



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Yllätyslaaikot ovat yksi uusimmista video pelien sisältämistä mikromaksukoh-teista. Viime aikoina on käyty paljon keskustelua yllätyslaatikoiden yhtäläi-syyksistä uhkapelaamiseen. Aihe on nostanut monia huolenaiheita liittyen esi-merkiksi lasten ja muiden riskialttiiden ryhmittymien altistuksesta uhkapelaa-miselle. Tämä tutkielma pyrkii ottamaan kantaa tähän väittelyyn tutkimalla, onko eri pelien yllätyslaatikoiden ja uhkapelaamisen välillä yhtäläisyyksiä. Tutkimus on toteutettu sekä kirjallisuuskatsauksena, että empiirisenä tutki-muksena. Kirjallisuuskatsaus pyrkii selvittämään, millaisia yhtäläisyyksiä yllä-tyslaatikoiden ja uhkapelaamisen välillä on jo löydetty. Tämän lisäksi, empiiri-sen tutkimuksen tarkoituksena on selvittää, mikä motivoi kuluttajia käyttämään rahaa uhkapelaamiseen, mikromaksuihin sekä yllätyslaatikoihin, ja miten nä-mä motivaatiot kohtaavat keskenään. Tulokset osoittavat, että tietyntaisten yllä-tyslaatikoiden ja uhkapelaamisen välillä voidaan nähdä yhteys. Tämä yhteys edellyttää, että yllätyslaatikoita voidaan hankkia oikealla rahalla, sattuma määrittää saadut palkinnot sekä palkinnot pitää pystyä muuntamaan takaisin rahaksi. Lisäksi, empiiriset tulokset osoittavat, että motivaatiot rahankäytölle ovat samankaltaisia uhkapelaamisen ja yllätyslaatikoiden välillä, mutta samalla mikromaksujen ja yllätyslaatikoiden välillä. Motivaatiot uhkapelaamiseen ja mikromaksuihin kuitenkin poikkeavat toisistaan huomattavasti. Tulosten pe-rusteella voidaan todeta, että yllätyslaaikot asettuvat johonkin uhkapelaamisen ja perinteisten mikromaksujen välimaastoon, sillä ne ovat itsessään mikromak-suja, mutta niissä on paljon yhtäläisyyksiä uhkapelaamiseen. Tästä syystä ne voivat olla jossain määrin sääntelyn tarpeessa. Yksiselitteisesti yllätyslaatikoita ei voida kuitenkaan rinnastaa uhkapelaamiseen.

Asiasanat: Yllätyslaatikko, Satunnaispalkintomekanismi, Mikromaksu, Video pelit, Uhkapeli, Pelinsisäiset ostot, Virtuaalihyödykkeet

ABSTRACT

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Loot boxes are one of the newest form of video game microtransaction items. Recently, there has been controversy about loot boxes being a type of gambling. Hence, there are many concerns regarding children and other vulnerable populations in being exposed to these forms of gambling. This study attempts to account for this controversy by investigating the connections between loot box systems in various games and elements of gambling. The research has been conducted as a literature review and as an empirical questionnaire study. The literature review aimed to discover the similarities that have been found between loot boxes and gambling. Additionally, the purpose of the empirical research is to find out what motivates consumers to spend money on gambling, microtransactions, and loot boxes, and how these motivations correlate with one another. The results suggest that there may be a connection regarding specific types of loot box systems and gambling. Such systems must include real currency purchases, rewards received according to chance and the ability to exchange the rewards into real currency. Moreover, the empirical results indicate that the motivations for money spending are somewhat similar between gambling and loot boxes, and at the same time between microtransactions and loot boxes. However, the motivations between gambling and microtransactions differ considerably. On the basis of the results, it can be said that loot boxes fall somewhere between gambling and traditional microtransactions, since they are microtransactions as such, while they also possess many similar features to gambling. Due to this fact, they may require regulation to some extent. However, loot boxes cannot be unequivocally equated with gambling.

Keywords: Loot box, Random reward mechanism, Microtransaction, Video games, Gambling, In-game purchase, Virtual goods

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1 INTRODUCTION

Video games today are booming in popularity as well as in terms of business value, and the gaming industry can be seen all the time evolving and growing (King & Delfabbro, 2018). Some time ago, video games were mostly a thing for computers or gaming consoles, but after smart phones became popular, mobile games have also established their foothold in the gaming industry. With mobile games, a new kind of monetization model for games was also introduced. Free-to-play games appeared on the markets (Davidovici-Nora, 2014). In the traditional monetization model, revenue came from players buying the physical copies of the games, whereas with free-to-play games it had to come from somewhere else (Davidovici-Nora, 2013). This is when developers came up with using advertisements and various microtransactions, such as subscription fees or in-game purchases. In the traditional model, the consumer bought the physical copy of the game and that was all the money spent. In the new model, the consumer obtains the game for free, but the game may have lots of advertisements in it, which can be removed by paying. Also the game may have features, which are only accessible for players paying subscription fees. Players may also encounter obstacles that slow their progress in the game, but which could be passed by either playing for a long time or paying a little extra to skip the obstacle.

In addition to these elements, players can also buy various items and goods in the game, that either help them progress in the game or provide cosmetic enhancements among other things (Oh & Ryu, 2007). These kinds of additional purchases made inside the game with real money are called microtransactions, hence they can also be called in-game purchases. Due to the constant revenue from microtransactions, game developers are able to keep the game alive with updates and adding content even after the game is released in the form of downloadable content (DLC). At first, microtransactions were mostly present in free-to-play games, but nowadays they are widely included in full priced major publishers' games as well (Schwiddessen & Karius, 2018). Video games are increasingly utilizing this type of monetization model, where in addition to the game itself, players can buy in-game virtual goods or add-ons with

real money (Evers, Van de Ven & Weeda, 2015). Publishers are also continuously coming up with new types of in-game purchases.

One of the newest items obtained via micotransactions are loot boxes. Loot boxes are openable virtual crates, from which the player can get various in-game items, such as weapons, skins, power ups and so on. When the player opens a loot box, the game gives him/her a set amount of random items from a wide variety of items. If the player does not get the desired item, he/she has no other choice, but to buy another box. Usually the items offered by the boxes are of a different value. Some are considered rare and most just common. These loot boxes have been compared to slot machines and lottery tickets, since the player invests money, in order that the game draws him/her random prizes. This has raised a debate as to whether loot boxes should be declared gambling by law, because they seem to have a lot of similar properties (Abarbanel, 2018). Some countries, for example Belgium and Netherlands, have already taken action and have in fact declared loot boxes as gambling. Hence, loot boxes are now dealt with under the gambling law of said countries. One definition of gambling by Griffiths (2018) is that the player wagers money on an event, which has an unsure outcome, but the purpose is to win more money or other goods. It has been argued, that wagering money on virtual goods cannot be considered gambling, because they are not money or material. However, on some occasions it is possible to sell these items online and receive money as a result, so in a way obtain a monetary value. The fact that these loot boxes appear in many games, that are permitted for under-aged people or tend to have a large under-aged player community has raised concerns regarding children's exposure to a form of gambling. Early exposure to gambling-like activities has been seen to have effect on problematic gambling in the future (Griffiths, 1995).

In this study loot boxes are examined further and their properties are compared to those which are usually considered as pertaining to gambling games. It is also discussed as to whether or not loot boxes should be declared as gambling. First, based on a literature review the concept will be examined by comparing the elements of loot boxes and gambling to each other. Previous research studies about loot boxes are also examined. After the literature review, the thesis continues by examining people's loot box spending habits, in relation to gambling and general microtransactions empirically with a survey. In the survey, consumers' motivations for using money on these three items will be investigated. Thus, the research problem for the study is:

- How similar are loot boxes to gambling in terms of customer motivation?

The problem can be divided into three research questions, which are:

- What kind of connections can be found between loot boxes and gambling? (Literature)
- What motivates consumers to spend money on microtransactions, loot boxes or gambling games? (empirical)

- How do the motivations of spending money vary between loot boxes and gambling games? (empirical)

Since the topic is rather new, there appears to be a substantial research gap. This characteristic, plus the nature and prevalence of issues relating to microtransactions, gambling and particularly loot box purchase by minors, increases the demand for such research.

In chapter 2, the concept of motivation is explained and how it affects people's purchase decisions. In chapter 3, the concepts of video games, monetization and relevant business models are examined and with further attention being placed on outlining microtransactions. In chapter 4, loot boxes are firstly defined, which is followed by definition of gambling. After that, the concepts are compared with one another while relationships are explained. This leads into depicting the kinds of risks and concerns that are connected to loot boxes and gambling. In chapter 5, the methodology for this study is described in detail. The results for both the literature review and empirical study are presented in chapter 6. The results are then discussed further in chapter 7, while chapter 8 concludes this research study.

The results of the literature review indicate, that there is actually a connection between loot boxes and gambling. The basic concept of loot boxes is very similar to lottery, where you pay for participation and then you might win something valuable. However, the connections can be made only with specific types of loot boxes, which in fact allow for the selling of items in exchange for real-life money. This can be seen as a form of cashing in the winnings. Connections have been identified with habits of problem gambling and the amount of money spent on loot boxes. But, the direction of this causality is yet unsure. Furthermore, connections can be seen in consumer spending motivations between gambling and loot boxes, and also microtransactions and loot boxes. The empirical results suggest that in the case of gambling and loot boxes, consumers are motivated by the chance to win, excitement and thrill. In the case of microtransactions and loot boxes, the motivations relate to unlocking more content and self-expression through character customization.

2 MOTIVATION

In this chapter, the definitions for motivation are examined via literature. After that, consumers' motivations for making in-game purchases and the processes of how these decisions are made will be examined. Motivation plays an important role in this study, as it is a driving factor in spending money on goods and service.

2.1 Definition of motivation

Motivation is usually defined as the factor that pushes people to do or pursue something that holds value for them. According to Atkinson (1964), motivation can be associated with words like 'want', 'desire' and 'need', which are the starting points for motivated action. If we chop motivation into smaller pieces, we can find motive, action and intention (Atkinson, 1964). A motive is something that causes a person to act. Action is actually doing something and it is influenced by intention, while intention can be seen as determination to act in a certain way or to do a certain thing (Atkinson, 1964). Pardee (1990) describes a motive as what prompts a person to act in a certain way or develop an inclination for specific behavior, while motivation can be defined as those forces within an individual that push him/her to satisfy basic needs or wants. Seeking to satisfy one's needs is actually the main goal of motivation. A very common scheme for classifying human motivation is Maslow's (1943) hierarchy of needs system. It includes five levels of motives, which are satisfied in a bottom-up manner. This entails that the lower needs must be satisfied first before moving on to the higher ones. The hierarchy levels are presented in the following figure (Figure 1).

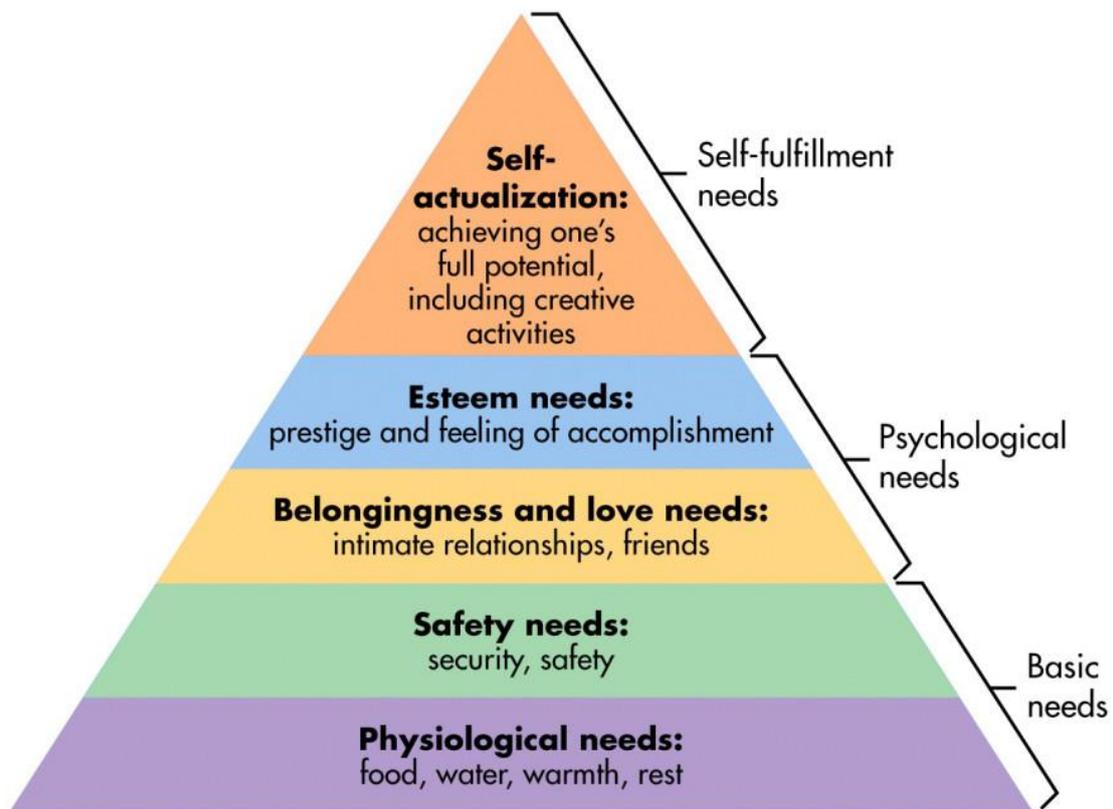


FIGURE 1 Maslow's hierarchy of needs (Demetriou, 2016).

As said above, the goal for motivation is to reach satisfaction, as in to satisfy the person's needs or desires. It can be thought that motivation begins with a want and ends with satisfaction defined as the gratification of a want (Atkinson, 1964). When thinking of motivation from the perspective of making purchases in video games, we can make connections to Maslow's top three levels of motivation, belongingness, esteem needs and self-actualization. Virtual items are what some player's want and they all have their own reasons and values for those feelings, which will be examined next.

2.2 Motivations behind in-game purchases

In-game purchases are very profitable business for game developers, so it can be assumed that players also tend to buy them. What makes these in-game purchases compelling for the consumers and why do they tend to buy virtual goods in games? Here, the motivations and purchase drivers behind in-game purchases are examined.

Lehdonvirta (2009) has found multiple attributes for virtual items that can be seen as purchase drivers for consumers. There are a couple of attributes providing utilitarian value in terms of performance and functionality, but most of the attributes provide only hedonic value for the player, like emotional enjoyment or pleasure. These attributes are visual appearance and sounds, back-

ground fiction, provenance, customizability, cultural references, branding and rarity. Lehdonvirta (2009) clarifies, that rarity of the items, has the biggest social effect, since having a rare item might distinguish a player from others who do not have it.

Hamari, Alha, Järvelä, Kivikangas, Koivisto and Paavilainen (2017) conducted a research study, trying to find out more concrete reasons for buying in-game virtual goods. In their study, they came up with six different factors for purchase reasons: 1) Unobstructed play, 2) Social interaction, 3) Competition, 4) Economical rationale, 5) Indulging children, and 6) Unlocking content. Each of these six factors is constructed from multiple different motivations, which are presented in detail below in Table 1.

TABLE 1 Concrete purchase motivations (Hamari et al., 2017)

Factor	Motivation	Description
1) Unobstructed play	Avoiding repetition	Repetitive content can be boring for players. Therefore, they may be enticed to use real money to take a shortcut.
	Continuing play	Many free-to-play games prevent players from continuing the game sessions unless they use real money.
	Protecting achievements	Achievement or items earned by players may degrade or be threatened if they are not protected.
	Reaching completion	Some tasks or levels may be skipped by paying.
	Speeding timers	Artificial timers can be quickened or skipped by paying.
2) Social interaction	Avoiding spam	Players are often rewarded in-game currency for inviting friends into the game. Spamming friends is generally frowned upon, so some players rather pay up than spam their friends.
	Giving gifts	Free-to-play games sell gifts that can be given to other players.
	Participating in a special event	Special events are unique one-time events. Players want to participate and not miss out on possible rarities.
	Personalization	Players want to differentiate themselves from other players by personalizing their in-game avatar or belongings.
	Playing with friends	Some games require players to pay for playing online with their friends.
3) Competition	Becoming the best	Many in-game items boost the performance of players, thus, giving them an advantage over other players.
	Showing off to friends	Social representativeness and showing off have been observed to be a major reason for in-game content purchases.
4) Economical rationale	Investing in a hobby	Players may be motivated to financially invest in their hobby.
	Reasonable pricing	Cheap deals entice players to purchase in-game content.
	Special offer	Special offers of limited quantity or time may entice players to purchase.
	Supporting a good game	Players might be enticed to spend money on in-game content to support the company running the game and thus ensure the game's continuance.
5) Indulging children	Indulging the children	Parents make purchases so that their children would enjoy the game more.
6) Unlocking content	Unlocking content	Players enjoyment of a game, may entice them to purchase more content to play, such as new maps and levels.

Unobstructed play means for example removing any game slowing obstacles, so that the game can progress more smoothly. It can be things like avoiding repetitive missions, speeding up timers or protecting achievements. Social interaction has a lot to do with having a unique personality in a game. Hence, it is connected to factors such as personalizing an avatar, playing with friends and giving gifts. Being successful in competitive games is also an important factor for purchase motivation. Being able to beat others in the game might be easier with some investments in virtual goods. The fourth factor, economical rationale includes motivators like reasonable pricing and special offers. Too expensive products can push customers away. The last two motivations were used as their own factors as they did not load onto any other factors. Indulging children means that parents buy virtual goods for their children in order to please them. This is heavily associated with special event offers, when the items are only achievable for a limited time. Finally, unlocking content in the game also holds a positive effect on the purchase decision of virtual goods. Players who enjoy the game usually like to open more content in the game, extending the player's expected game time.

This last factor is associated with Hamari's (2015) earlier study, where he examined how enjoying the game itself affects the purchase of virtual goods. He found out, that the more a player enjoys the game as it is, the less they are willing to buy virtual goods, since the gameplay does not require enhancement. However, enjoyment of the game increases the willingness to play more of the game and support the developers, which in turn can have a positive effect on purchase intentions of additional content and other virtual goods (Hamari, 2015). Additionally, Hamari pointed out, that players tend to reflect peers' attitudes, so their positive attitudes increase the player's willingness to buy virtual goods, which associates with social interaction factor. Yoo (2015) supports these findings saying that, the feeling of fun, ability to display the items to others and help in progressing in the game are considered important factors in buying virtual items. The items should also be cost efficient and reasonably priced. As we can see, many factors affect purchasing of virtual goods and they are affected by players' personal values. For example, in online games, social reasons have possibly the biggest impact on customer's purchase motivation, because playing online with other people is a highly social activity.

On some occasions, players seem to resent in-game purchases all together. This can happen especially in competitive games, where players can buy functional items that can give a player much more advantageous position against others (Evers et al., 2015). In such a scenario, the purchasable items can skew the competition and decrease fair play, as those players who choose to buy functional virtual items in competitive games are more likely to win than those who do not buy (Hamari, 2015; Lin & Sun, 2011). This may also produce pressure for others to buy items as well. This phenomenon is commonly known as 'pay-to-win' and it is one of the reasons, why the debate about loot boxes started in the first place. The game in question was Star Wars: Battlefront 2, which

was published on November 2017 by EA electronic arts. The game had a public beta-phase, where players could take part in testing it. At that time, the micro-transaction system in the game was clearly 'pay-to-win' and it caused a huge customer backlash, resulting in the removal of microtransactions altogether for a while. Microtransactions were later returned to the game, but this time they were purely cosmetic. Now that the purchase drives for virtual items have been examined, a more statistical look on consumers' in-game purchase behavior is presented in the following sub-chapter.

2.3 Consumers' in-game purchase behavior

In this sub-chapter, in-game purchase behavior is examined through online statistics and earlier research about who are the people buying virtual goods, how often they make in-game purchases, and how much do the purchases increase over time or can some other patterns be seen?

According to The Statistics Portal (Video game monetization - Statistics & Facts), in 2015 consumers spent \$22 billion on in-game purchases and this number will likely rise to approximately \$32 billion by 2020. In 2016, more than a quarter of video game consumers in the United States admitted to purchasing some form of additional video game content ranging from \$1 to \$20, while 11% of consumers said that they have spent more than \$250 on in-game purchases. The percentage of paying users compared to non-paying users is very small overall. Paying users are quite often differentiated into three groups based on the amount of their personal average payment or in relation to average revenue per paying user (ARPPU). Lovell (2011) referred to these three groups as minnows, dolphins and whales, from which minnows represent 50% of players, dolphins 40% and whales 10%. Minnows are the largest group, but their ARPPU is only \$1, while for dolphins it is \$5 and for whales \$20. Even though whales are the smallest group, the revenue from in-game purchases comes mostly from these high spending users (Lovell, 2011).

According to Wohn (2014), there is little academic research that has examined actual virtual good purchasing behavior. He says that this is partly because video game companies do not share such data and due to that fact, much of the research concentrates on examining intention to purchase rather than actual behavior.

3 VIDEO GAMES & MONETIZATION MODELS

In this chapter, scholarly definitions of video games are examined. Additionally, video game monetization including in-game purchase models are explained. A deeper look is taken into microtransactions and why developers want to include them in their games. In-game purchases have become very familiar monetization models for games and nowadays they are also widely included in full priced major publishers' AAA-games.

3.1 Definition of video games

Video games are a popular form of digital culture. They come in many forms and can be played on lots of different platforms like computers, gaming consoles and mobile devices like phones or tablets et cetera. According to Granic, Lobel and Engels (2014) video games are designed to actively engage the player to actually do something in the game and not just passively follow a story as in movies for example. There are so many different themes and genres of video games that a comprehensive taxonomy of them is very difficult to develop. According to Osathanunkul (2015), there are no generally accepted formal definitions for different video game genres, but a games genre is usually defined according to its perspective, gameplay, interaction and objective. A video game genre can be, for example action, adventure, first-person-shooter (FPS), music, puzzle, roleplaying, simulation, strategy and sport.

For a long time, video games were sold only as physical copies, where the customer paid a fixed price for the product and could play the game as much as they liked with no obstacles. With the larger coming of the internet, video games moved online and they changed to a form of 'game as a service', where the game could be continuously updated (Schwiddessen & Karius, 2018). These games could be downloaded from online stores straight to the devices, instead of buying them physically. Nowadays video games can be divided into free-to-play (F2P) and pay-to-play (P2P) games (Osathanunkul, 2015). F2P games are as

their name states free and the player can download them on their device without any costs, but these games usually have lots of advertisements or microtransactions in them in order to make profit (Davidovici-Nora, 2013). P2P games on the other hand are sold for a fixed price, but they also can include additional costs in the form of microtransactions. P2P games from large developers and publishers are often called AAA-games or triple-A games. According to Egenfeldt-Nielsen, Smith and Tosca (2013), these are still the driving force of video game industry.

3.2 Monetization models

There are a couple of different approaches for video game monetization. The traditional model is commonly known as the pay-to-play model, which means that the customer has to pay the whole price beforehand, in order to receive the fully functional product. After the purchase, the customer can enjoy the product without paying anything further. This business model where customers acquire products or services by paying for them is common in a variety of other industries too (Osathanunkul, 2015). With the digitalization of the gaming industry and rising development costs, the traditional model has moved towards a style where the customers can buy the product in advance, while it is still in production. As a reward for paying in advance, customers may be provided with early access to the game, a possibility to beta test it or they might be given some additional exclusive content once the game is released. In contrast to the traditional model, is the free-to-play model, where the customers are provided with either a fully functional product or a significant portion of the product for free.

The free-to-play model is mostly used in mobile games or massive multiplayer online games. Free-to-play games can make revenue with advertisements or by providing players with purchasable extra content and virtual goods among other things (Osathanunkul, 2015). These purchases are also known as microtransactions, which have many different variations. According to Davidovici-Nora (2014), the business model economic architecture differs between pay-to-play and free-to-play games. The traditional P2P business model has a simple and linear economic architecture: monetization, acquisition and retention. The player first buys the game, then discovers gameplay and once the price is sunk and quality is tested, the player will be more or less retained. On the other hand, the F2P business model has a complex and interactive economic architecture, which begins with acquisition followed by retention and at the end, monetization. The player has to be first acquired, then locked-in and after that, he might have incentives to pay if he is entertained enough. The F2P model has therefor an inversed economic logic compared to P2P model.

3.3 Microtransactions & Virtual Goods

According to Schwiddessen and Karius (2018), microtransactions were first introduced in freemium games, which are games that give basic services for free, but require payment for premium content. Microtransaction is a payment made in a game, in order to receive virtual goods or extra content and therefore they are more commonly known as in-game purchases. In-game purchases have been present in F2P games for a long time and they are the main source of income for F2P games (Davidovici-Nora, 2013). Microtransactions are a huge business for the gaming industry, as F2P PC games alone generated about \$22 billion dollars of revenue in 2017 (Schwiddessen & Karius, 2018). That number does not include console gaming markets or even bigger market of mobile games. On mobile game markets, for example Clash of Clans and Clash Royale, F2P games from a game studio called Supercell, generated \$2.3 billion from microtransactions in 2016.

Microtransactions are often used for buying items or virtual currency inside a game. According to Lehdonvirta (2009), virtual goods are objects that exist inside online games. They can be, for example, functional items, such as weapons, armor or power ups; decorative items such as clothes and accessories for your avatar; in-game currency or tokens, or downloadable extra content for the game, like new maps or features. In this thesis, I will be concentrating on a specific type of microtransaction item, loot boxes, which I will examine in further detail in chapter 4.

Microtransactions as a monetization model are the result of constantly rising development costs in the video game industry. To be able to compete in the video game industry, the developers have to produce very high quality games, which require cutting edge technology and skill to make. Egenfeldt-Nielsen et al. (2013) tell in their book, that nowadays it is not at all unusual for an AAA-game development team to include more than 100 specialists from different fields, like sound, programming, animation, graphics, marketing, game design and production. For comparison, the MS-DOS version of the 1989 hit game SimCity had a total of 20 people working on it, whereas Call of Duty: Modern Warfare 2 from late 2009 listed more than 200 people in the credits. This is due to consumer demand for higher quality games and that has caused development costs for video games to skyrocket, while the average purchase price for video games has remained the same. Game development in 2010, could cost around \$18 and \$28 million or even more, while the development could last anywhere from 18 to 36 months (Egenfeldt-Nielsen et al., 2013). In order to keep game development profitable, it was necessary to find new monetization models, such as microtransactions (Schwiddessen & Karius, 2018).

Oh and Ryu (2007) characterize two microtransaction based monetization models, subscription based and item-selling based models. They say that subscription based payment model is mostly used on massive multiplayer online role-playing games (MMORPG), with for example monthly fees. Monthly sub-

scriptions can pose a burden, since they might make the players feel that they have to play the game, since they are constantly paying for it. On the other hand, monthly subscription fees allow the game developers to continuously maintain and update the game.

In the item-selling based model, players pay for each bought item according to its price. Some items can be permanent, but some might have a limited number of uses and then they have to be bought again. Usually games that have in-game purchases, also have some kind of in-game currency, which can be used for the purchases. According to Kinnunen (2016), there are usually two types of currencies, soft currency and hard currency. Soft currency is received through playing the game and it can be used to do some purchases in the game, but for more valuable items, hard currency is often required. Hard currency is usually received by buying it with real money. Kinnunen (2016) says that soft currency may seem free, but its actual objective is to teach players to do in-game purchases and then move to buying hard currency. Hard currency can also be turned into soft currency, but not vice versa. Oh and Ryu (2007) state, that this kind of item-selling model is better than subscription based model, as it has less financial burden towards players and it lets players choose more specifically what they are paying for. This kind of games can also be easier to approach for new players compared to subscription based games.

4 LOOT BOXES & GAMBLING

In this chapter, loot boxes, gambling and the debate around these two concepts are examined. A comparison of loot boxes properties with elements of gambling is conducted based on existing literature. Both sides of the debate are discussed in terms of those who think loot boxes are gambling and those who think they are not gambling. In addition, the concerns regarding loot boxes are presented.

4.1 Definition of loot boxes

Loot boxes are a type of virtual item the player can buy in an online game. According to Griffiths (2018), they can be seen also in different forms, such as crates, chests, bundles and card packs. Consumers can either purchase loot boxes with real-life currency, in-game currency or at some instances, earn them by playing the game. The last option however, takes a lot more time and effort. By opening the boxes, the player will get a set amount of randomized in-game virtual goods based purely on odds and chance (Koeder & Tanaka, 2017). Loot boxes can include various virtual items, such as weapons, armor, virtual currency, additional skills and even completely new or exclusive characters. They are designed to drop some items less frequently than others, hence making them of different value in the eyes of gamers. There are usually plentiful of items, which are considered common, but then there is items that you do not get very often. These items are called rare items and sometimes there can also be very rare items, which are usually referred to as legendary items (Schwidessen & Karius, 2018). The player always gets something from the loot box, but the items given might not be what he/she wanted or they might be something the player already had. If the player receives such duplicate items, they can usually be changed into in-game currency. The rare and legendary items are the most desired ones among players, but there is usually no guarantee of getting them, as the chance of winning such items is minimal and commonly unknown (Griffiths, 2018). This system makes players purchase more loot boxes

in order to obtain the desired item. On some occasions the loot boxes are divided into different categories, each including different items. More expensive boxes might be guaranteed to include for example at least one rare or legendary item.

There is a variety of different types of loot box mechanics, which can have some different features. Zendle, McCall, Barnett and Cairns (2018) defined seven features that appear in different types of loot boxes. These features include requirements for payment, opportunities for cashing out, pay-to-win effect, using in-game currency, crate and key mechanics, showing near-misses and containing exclusive items. The requirement for payment means that in some games, loot boxes can only be opened by paying real-world money for them, whereas in other games it can be possible to open the boxes without paying a cent. For example in Counter Strike: Global Offensive, the only way to open a loot box is to pay money. On the other hand, in Overwatch players earn loot boxes for playing the game itself and can open them for free, but they also have the option to buy them. Additionally, in some games, usually mobile games, received loot boxes will either open after a set period of time, or the player can skip the wait by paying further in-game currency or real-world money. On some occasions, loot boxes cannot be bought with real-world cash at all, but they are solely received through playing the game and for example completing certain tasks or missions.

The second feature is the opportunity to cash out. In some games, for example Overwatch or Destiny 2, there is no possibility to trade items received from loot boxes, as they are bound to one account. There is no way to make money from these loot boxes. On the other hand, some games allow players to trade these items for other in-game items or for real-world money. For example, players of Counter Strike: Global Offensive and Player Unknown's Battlegrounds can buy and sell the in-game rewards that they receive from loot boxes for real money via these games' integration with the Steam marketplace and third-party websites. The third feature is whether purchasing loot boxes give competitive advantage. In most games the contents of loot boxes are simply cosmetic items, which have no effect on the gameplay itself. However, on some games the items contained within loot boxes can offer players a distinct advantage against others. The fourth feature is the use of in-game currency. In some games, loot boxes are bought directly with real-world currency, while in many games, they are paid by using in-game currency. In-game currency itself may be either bought directly for real-world money, or earned by playing. However, in-game currency can never be changed back into real-world currency.

The fifth feature is 'crate and key' mechanic, where players typically earn locked loot boxes by playing the game, but must then obtain a key to open these boxes. These keys can usually be bought with real-world money, so in a way the game teases the player with a reward and encourages them to pay for actually getting it. The sixth feature is the showing of near-misses. Some loot boxes show players only the items they got from opening a loot box, while others

show beforehand a variety of rare items that players might win by opening that loot box. Such mechanics also usually include some type of spinning wheel or something similar, where the player can see different items. The last feature is the inclusion of exclusive items. Exclusive items are things that can be found only in loot boxes and nowhere else in the game, for example unique cosmetic items. However, this is not the case in all games. In some games, loot boxes contain items that are obtainable elsewhere in game. Often these items can also be directly purchased using an in-game currency. The loot box features are summarized in the Table 2 below.

TABLE 2 Summary of loot box features

Feature	Description
1. Paid & unpaid openings	Whether buying/opening loot boxes involves real currency or not.
2. Cashing out	Whether loot box items can be sold for real currency or not.
3. Paying to win	Whether loot box items give players game-play advantages, which affects the balance of the game.
4. Using in-game currency	Whether loot boxes can be bought with in-game currency or not.
5. Key & create mechanic	Loot boxes are earned by playing, but they are locked and the key can be bought with real currency.
6. Showing near-misses	Whether players are only shown the received items or also a variety of rare items that players might win by opening that loot box
7. Exclusive items	Loot boxes containing items, which are not found anywhere else in the game.

As there are so many different types and forms of loot box systems having different features, using the term loot box can be sometimes misleading or confusing. Nielsen and Grabarczyk (2018) proposed a more general classification for loot box systems in their article. They say that loot box is too narrow term and they can actually be classified into a more general category of random reward mechanisms (RRM). Random reward mechanisms originated from massive multiplayer online roleplaying games (MMORPG), where by killing different enemies, the player could get items of different value as a reward determined by odds and chance, also known as loot. According to Nielsen and Grabarczyk (2018), the crucial difference between these two implementations of RRM is that the older version celebrates the reward (loot) the player gets, while the newer version celebrates the random procedure (loot box) itself by objectifying it. Instead of a hidden procedure, it has become a concrete box, card pack, wheel or something similar. The modern implementation of RRM has in fact transformed the sheer act of opening these boxes, card packs, or spinning the wheel into a form of entertainment in the scale, that people are opening them on video streams, while other people watch them.

4.2 Definition of gambling

Gambling as itself is a very old phenomenon, but in the modern context, forms of gambling are for example casino games, card games, lotteries, slot machines, and sports and race wagering. Nowadays, these activities are also found from the internet and they can be played from home. Griffiths (1995) has specified five characteristics that are usually connected to gambling activities: (1) the exchange of money or valuable goods; (2) an unknown future event determines the exchange; (3) chance at least partly determines the outcome; (4) non-participation can avoid incurring losses; and (5) "Winners gain at the sole expense of losers". Gainsbury, Hing, Delfabbro and King (2014) proposed a taxonomy for gambling games, where they theorize that a game can only be considered as a gambling activity, when it includes wagering money in relation to in-game outcomes. Secondly these outcomes must have the ability to reward the player with monetary or equivalent prizes in return. This outcome must also be at least partially determined by an unavoidable element of chance. They also state that all of these elements must be present, in order that the activity can be considered gambling (Gainsbury et al., 2014). Since gambling activities must include the element of chance, they also do not usually require skill from the player. When chance has greater effect on the outcome than the player's skill, the activity can be considered gambling. There are some gambling games that may require skill, for example poker games, but they are still affected by chance to some extent.

It has been argued, that there is a convergence between gambling and video games (Gainsbury, Russell, King, Delfabbro & Hing, 2016). This means that gambling elements are being added to video games and vice versa. One example for such convergence is simulated gambling in video games. Simulated gambling means that a form of gambling game is included virtually in a video game, which otherwise might have nothing to do with gambling. In simulated gambling the player takes part in gambling games using their in-game avatar and in-game virtual currency, so there is no real money involved. There are many examples for simulated gambling. In a video game called *The Sims*, it is possible to take your avatar into a casino, where you can participate in gambling activities or in *Red Dead Redemption*, you can play poker and blackjack in taverns. Many games that are allowed for children, such as *The Sims*, have simulated gambling in them. This has raised concerns for children being taught to play gambling games in virtual worlds, which may encourage gambling behavior later on in real life (King, Delfabbro & Griffiths, 2010; Gainsbury et al., 2016).

Another example of this convergence is social casino games. These are games found online, especially on social networking sites, which are virtual counterparts of the real casino games. The difference in social casino games and real casino games is the involvement of money. Social casino games are free to play and do not provide real money prizes, but there is a possibility to purchase

additional virtual currency using real money (Gainsbury et al., 2016). Despite the lack of monetary involvement, social casino games have been seen to encourage real life gambling activities.

4.3 Comparing loot boxes with gambling

Griffiths' (1995) five characteristics of gambling serve as a great framework for comparing gambling activities with loot boxes. Drummond and Sauer (2018) conducted similar comparison in their comment, where they added one more important characteristic in this context, the ability to "cash out", as in get the winnings out of the game. These six characteristics provide a good outline for comparing gambling activities to the properties of loot boxes, which is presented in Table 3. In the comparison, there were three different loot box systems found. The least gambling resembling system was found in Overwatch and Star Wars Battlefront 2 (after EA changed them), since in both of these games, loot boxes provide only cosmetic enhancements for characters and these items cannot be sold to other players or on any trading forums. In other words, there is no possibility to cash out. The second group includes games that do not allow cashing out, but the items provide competitive advantage. Most games falling into this category are sports games like FIFA 18 or NHL 19. The effect on gameplay itself can make buying loot boxes feel like a necessity for succeeding in the game, but are not a part of gambling properties per se. The third group including games like PlayerUnknown's Battlegrounds (PUBG), Counter-Strike: Global Offensive (CS:GO) and Rocket League was indeed comparable with gambling activity. In these games, players can buy loot boxes, that provide cosmetic items, which do not have any particular gameplay effect, but they can be sold to other people via externally-hosted marketplaces for real money and make significant profit by doing so. This can be seen as a form of cashing out.

TABLE 3 Comparison of loot box systems and gambling elements in different games

Game	Exchange of money	Unknown future event	Chance involved	Avoid losses by non-participation	Competitive advantage	Ability to cash out
PUBG	x	x	x	x	-	x
CS:GO	x	x	x	x	-	x
Overwatch	x	x	x	x	-	-
Star Wars Battlefront 2	x	x	x	x	-	-
Rocket League	x	x	x	x	-	x
FIFA 18	x	x	x	x	x	-
NHL 19	x	x	x	x	x	-

Another way to look at this matter is whether the loot boxes are “embedded” or “isolated” from the real world economy. According to Nielsen and Grabarczyk (2018), it is an important factor when classifying different RRM. Using this classification they found four different categories of RRM, which are presented in Table 4. In the first type of RRM, both resources and rewards are isolated from real world economies. This means that there is no possibility to use real money for achieving the reward nor can the reward be sold. The second type goes a bit further, by allowing players to trade the virtual items between each other with real currency, but the items are still only received by playing the game. The third type allows players to buy loot boxes with real currency, but the reward is only usable in the game and cannot be sold or transformed into real currency. Only the fourth type allows players to both buy loot boxes with real currency and then sell the received items to other players for real currency. This type poses the clearest example of gambling-like activity.

TABLE 4 Different random reward mechanism implementations

Resources (required for achieving the eligibility condition)	Reward	Example game
Isolated	Isolated	Diablo 1, Diablo 2
Isolated	Embedded (virtual sellable object)	Diablo 3 (with auction house)
Embedded (real money purchase)	Isolated (virtual unsellable object)	Overwatch, Star Wars Battlefront 2
Embedded (real money purchase)	Embedded (virtual sellable object)	PUBG, CS:GO, Rocket League

It seems that when the game allows players to buy loot boxes or other RRM for real currency and then sell the received items for real currency, there is a possibility to consider it as gambling. According to Drummond and Sauer (2018), “games that allow players to sell their virtual items (that is, cash-out their winnings) provide the clearest example of gambling in video games” (Drummond & Sauer, 2018, p.532). Some games let people sell the virtual items on either third-party websites or official trading forums, in which case the player can sort of liquidate their virtual goods. These kinds of games appear to meet both the psychological and legal definitions of gambling (Drummond & Sauer, 2018). Nielsen and Grabarczyk (2018) support this idea, as they state that in this topic it is important to distinguish between games that allow players to ‘withdraw’ money or virtual items that can be translated into other currencies.

Combining the results from Table 3 and Table 4, we can see that the games from Table 3 that allow cashing out are all in the same group on Table 4. As an example, the loot box system from Counter-Strike: Global Offensive (CS:GO) was in both tables in the groups that can be considered as gambling. The game allows player-to-player trading on gaming platform Steam, and it is also connected to third-party sites, which allow players to buy and sell items between

each other for real-life currency. Items that are in fact received through in-game loot boxes. According to Beneš (2018), Steam platform allowing users to trade in-game items has made it possible for third-party trading portals, 'skin casinos' and other gambling sites to be created. On these websites, players can buy, trade and bet on in-game items and most of them do not even verify age. Beneš (2018) says that on these sites, the price of the in-game items can start as little as 0,03€ and can go up to 10 000€ or even more. The prices for items are determined by supply and demand, so the rarest items usually go up to high prices, since there is only a few of them available.

Facts supporting the argument that loot boxes are not gambling are that when player buys a loot box, he/she is guaranteed to always get something in exchange, so he/she cannot lose the money spent, even though the reward might be of less value than spent money. It is true that the player always gets something, but when the player receives only unwanted 'common' items, instead of those 'rare' or 'legendary' ones, is this in fact losses disguised as winnings. In their article, Nielsen and Grabarczyk (2018) discuss a phenomenon introduced by multi-line slot machines called quasi-winning. Quasi-winning means that the game makes the player think he/she is winning something, while actually they are losing steadily. Another argument against loot boxes being gambling is that the buyer never receives money directly from the loot box, but has to sell the item to exchange it into real money (King & Delfabbro, 2018). Although in some countries, loot boxes have already been declared as gambling, many other countries have decided they do not meet some legal definitions of gambling. These countries do not consider virtual items as 'something of value', so they do not see using money on loot boxes as a financial loss (King & Delfabbro, 2018). Additionally, game developers are not seen as legally responsible for third-party websites that facilitate players cashing out virtual items.

4.4 Concerns brought by gambling in video games

This sub-chapter discusses the concerns that have risen from the debate on loot boxes. Additionally, possible future risks and consequences that could follow, if loot boxes were classified as gambling by law are examined.

As loot boxes resemble gambling activities on many areas, Nielsen and Grabarczyk (2018) identified various risks they might possess to vulnerable audiences, such as gambling addicts. Such gambling phenomena as gambler's fallacy, near misses, losses disguised as winnings and illusion of control can be connected to loot box functions. The Gambler's Fallacy is a concept proposed by Wagenaar (1988) and it means that the gambler thinks the probability of winning increases with the length of an ongoing run of losses, while actually the odds of winning remain the same. A near miss situation is familiar from slot machines for example, where the player almost gets the winning row, which is showing just next the losing one that the player actually got. Illusion of control

means that gamblers tend to overestimate their chances, because they think that they can control the game somehow.

The act of opening a loot box can have very similar attributes as gambling. It includes the thrill and excitement that you might “hit the jackpot” and get just what you wanted, but when you do not get it, it is easy to think that maybe the next one will give it. Clark, Lawrence, Astley-Jones and Gray (2009) say in their article, that near-miss situation in gambling increases the desire to play, although they are not pleasant. This type of near miss situations can be found for example in loot box systems like in Counter-Strike: Global Offensive, depicted in figure 2.

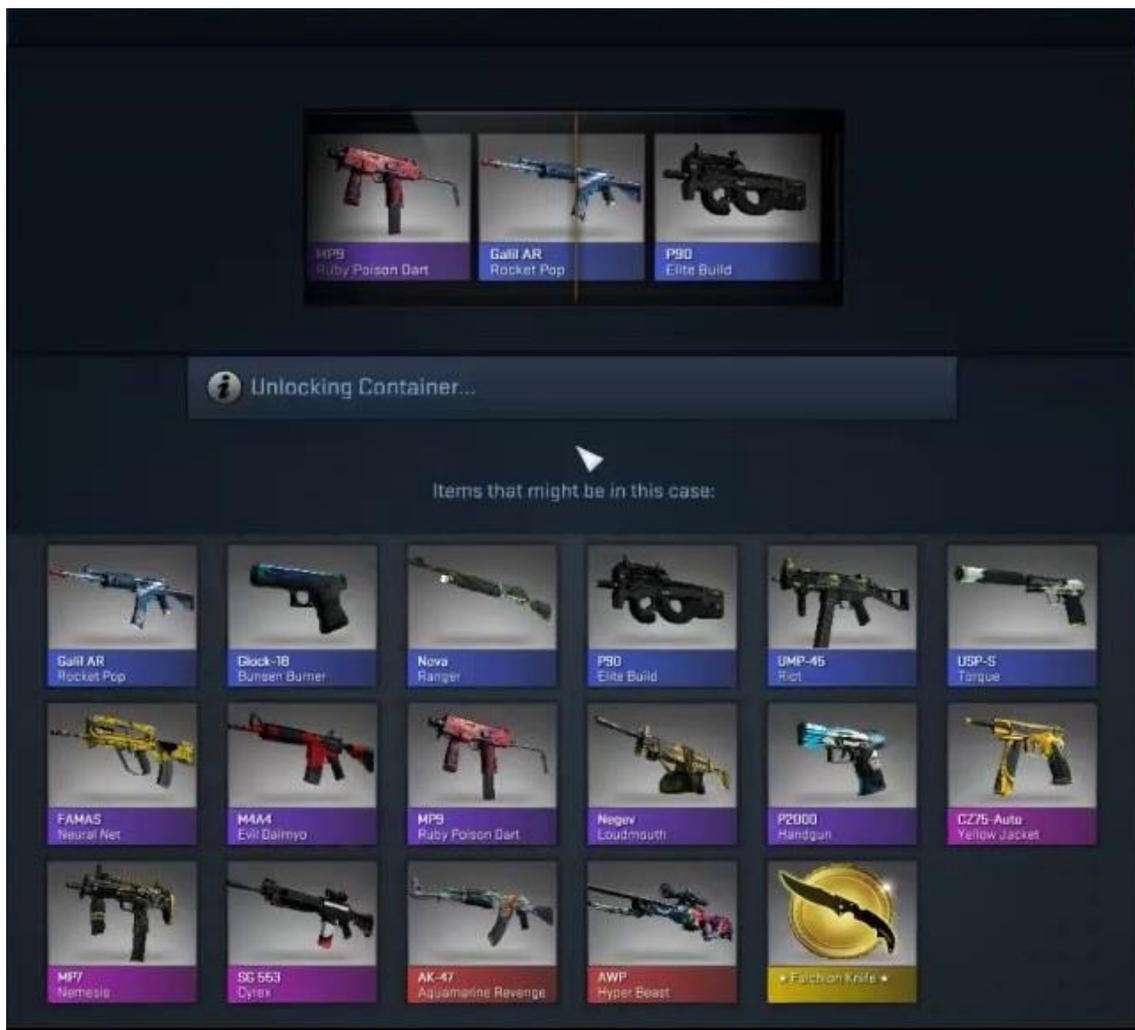


FIGURE 2 Counter-Strike: Global Offensive loot box

The system in CS:GO works like a slot machine. It has a spinning screen, having all the available items in it and then stopping on some item just missing the rare one you wanted. Under the spinner there is a list showing some desirable items that could be received from the box. This can make the player feel like they almost got the price they wished for and that next time it would be somehow easier to get, when in reality the odds are still the same. For a person with tendency for gambling addiction, this type of mechanism can be very devious.

Addictive and predatory properties in loot boxes arise concern for children being affected by them, as they tend to have poorer impulse control than adults, which in turn could increase their vulnerability towards gambling mechanics and behaviors learned from these mechanisms (Lussier, Derevensky, Gupta & Vitaro, 2014). Loot boxes are present in many games played by underage people and they are openly available for anybody. Loot boxes are made to look interesting and when opening them you get lots of exciting sounds and explosions et cetera, which surely are interesting to younger audiences. Sometimes games might also use pressuring tactics to incentivize purchases, like limited time or seasonal offers, when you can get some items for only that period of time. Younger players may be particularly less equipped to critically appraise the value proposition of such schemes (King & Delfabbro, 2018).

This year many countries have started or have done a juridical investigation, if loot boxes are gambling or not. Some countries have declared that they have to be considered as gambling and some have decided that they do not fulfill all the necessary properties for gambling activities. According to Abarbanel (2018) there is a risk that classifying one specific game component as gambling might lead to other components to fall under similar classification as well. This is why legislation and regulation should be properly defined. This is also one of the reasons, why Nielsen and Grabarczyk (2018) proposed their classification for RRM, so that if legislative actions are required, they can be targeted to the right type of systems and not to all or too few of them. Too general regulations made in terms of protecting vulnerable populations, might end up overly restricting adults, while too narrow regulations could be circumvented in the future (Abarbanel, 2018; Nielsen & Grabarczyk, 2018).

Zendle and Cairns (2018a) conducted empirical research investigating the link between problem gambling and the consumption of loot boxes, due to the concern in the academic community that similarities between loot boxes and gambling may lead to problem gambling amongst gamers. They say that loot boxes and gambling have similarities, which may cause individuals who are already problem gamblers to spend large amounts of money on buying loot boxes in games, just as they would spend large amounts of money on other forms of gambling. The results of their study indicated that problem gambling has a statistically significant effect on the purchasing of loot boxes, as a person with more severe gambling problem spent more money on loot boxes than those with less of a problem. They concluded that a causal relationship between problem gambling and buying loot boxes is a fact, but they could not yet state the direction of this causality. Zendle and Cairns (2018b) conducted another research continuing the topic, which further strengthened these findings. The direction of the causality was still unclear, but either way, the presence of loot boxes in video games either enables problematic gambling in gamers or they provide an opportunity for games companies to exploit pre-existing psychological problems amongst their customers for massive monetary gains. Zendle and Cairns suggest either removing loot boxes from video games all together or at least that the ratings agencies should consider incorporating additional parental

advisories into games featuring loot boxes. Also games with loot boxes should be restricted to players below legal gambling age (Zendle & Cairns, 2018b).

5 METHODOLOGY

In this chapter, the methodology of the research is described. The research problem for the study is: How similar are loot boxes to gambling in terms of customer motivation? To solve this problem, a two part investigation was conducted. The first part was to review earlier literature about the topic and the second one was to examine consumers' spending motivations on gambling, microtransaction and loot boxes empirically. Due to the nature of this research, this chapter is also divided into two sub-chapters. First sub-chapter includes the methods used in literature review, while the second one is about the empirical research.

5.1 Literature review

Literature review was chosen as the method for the theoretical basis of this study, since it is quite common method to be used with student theses. The aim for the literature review was to answer the question: "What kind of connections can be found between loot boxes and gambling". Additionally, the concepts of motivation, gambling and microtransactions were introduced based on literature. These three items are all important to understand in the context of this study.

For the collection of literature, various databases were used. Most of the used articles were found via Google Scholar and ScienceDirect, while some additional books were found from JYKDOK library database. The searches were conducted using keywords, such as "loot box", "microtransaction", "gambling", "purchase", "video game", "motivation", "monetization", "in-game purchase", "virtual good" and different combinations of them. The literature collection process began with searching for relevant topics, which was followed by going through the abstracts of the articles. The number of citations was also checked, but due to the newness of the topic, this was not considered as the most important element. If the article seemed relevant by topic and abstract, it was ex-

amined further by going through conclusion and discussion. On some occasions it was also necessary to read through the whole article. In addition to the use of search engines, backwards search was used abundantly. What made the search process difficult, was that there is very little research done on loot boxes per se. On the other hand, virtual goods and gambling have been studied fairly plenty.

5.2 Empirical study

The empirical part of this study attempted to answer the two following questions: What motivates consumers to spend money on microtransactions, loot boxes or gambling games? How do the motivations of spending money vary between loot boxes and gambling games? In order to study these questions, an online survey was chosen as the method of data collection. The survey was conducted via Webropol survey software. In addition to the 7 background questions, the survey consisted of 26 questions, which were divided into three themes: gambling, microtransaction and loot boxes. Each theme included both quantitative questions and qualitative open questions. Some of the open questions were coded into numerical data to make them easier to analyze and present.

The survey was distributed via three different channels. Firstly, it was posted on the University of Jyväskylä IT graduates email list. This channel provided most of the participants. Using a university email list also meant that most of the participants would be students and quite possibly young adults. Secondly, the survey was posted on the authors personal Facebook feed. The final attempt to gather participants was made by posting the survey on a Finnish gaming magazine 'Pelaaja' forum. In the survey information, it was stated that the participants should have some experience or knowledge on gambling, microtransactions and loot boxes. Other than that requirement, anyone would be suitable to participate.

The collected data was analyzed using IBM SPSS Statistics software. Each of the three themes had multiple questions measuring spending habits and motivations. The spending motivations were measured with Likert-scale questions, which were based on two different models. The questions about gambling and loot boxes were based on a five factor gambling model, constructed by Lee, Chae, Lee and Kim (2007). The measured motivation factors in the model are monetary, amusement, excitement, avoidance and social. The questions about microtransactions were based on the Theory of Consumption Values first constructed by Sheth, Newman and Gross (1991), but modified to better suit the topic of virtual goods by Ho and Wu (2012) in their study about factors affecting intent to purchase virtual goods in online games. The Modified Theory of Consumption Values has four measurable factors, which are monetary, functional, emotional and social. For each factor, there were a couple of Likert-scale questions, from which the answers were combined into sum variables. These sum variables were then compared to each other with Pearson's correlation, in

order to find out if there are connections between the spending motivations on each theme. For example, for each theme there was a monetary factor, which could be compared to each other to find out if they affect one another.

In addition to quantitative questions, there were also some qualitative open questions to support the Likert-scale questions on motivations. In the open questions, participants were asked their top three spending motivations on each theme. These motivations were coded into categories using descriptive coding, in order to find out which motivations were the most common. The coded categories are presented in the results section.

6 RESULTS

In this chapter, the results from the conducted study are presented. The results for the literature review and the empirical study are separated into their own sub-chapters. First sub-chapter contains the results for the literature review and the following sub-chapter is about empirical results.

6.1 Results for the literature review

The results from the literature review indicate, that there can indeed be seen connections between loot boxes and gambling. A couple of elements in loot boxes need to be found, in order to be able to compare them with gambling. There must be: (1) the exchange of money, (2) an unknown future event, (3) chance determining the outcome, (4) the ability to avoid losses by not participating and finally (5) the ability to cash-out the winnings. Additionally, it is clarified that both, the acquisition of the loot box and the item received has to be embedded to real life economy. This means that the loot box is purchasable with real-life currency and that the received item has real-life value. From 8 investigated games, 3 fulfilled all of these requirements. In each of these three games loot boxes can be bought with real-life currency and the received items can be sold on third-party trading websites or on some instances they can be used for further gambling.

There was also found a connection between problem gambling and the amount of money spent on loot box purchases. It seems that a person with gambling problem is more likely to spend money on loot boxes, than a person who does not have a problem or tendency to gamble. However, it could not yet be resolved as to whether loot boxes induce gambling problems in consumers or do pre-existing gambling problems cause individuals to spend more money on loot boxes. It may well be both cases.

6.2 Results for the empirical study

In the empirical part of this study, two research questions were investigated: What motivates consumers to spend money on microtransactions, loot boxes or gambling games? How do the motivations of spending money vary between loot boxes and gambling games? In the survey invitation, it was stated that the survey is targeted to people who have at least some experience regarding in-game purchases and gambling.

6.2.1 Background information

A total of 158 people took part to the internet survey ($N=158$). 139 participants were male (88%), 17 were female (11%) and two participants (1%) stated their gender as other. The figure below (Figure 3) depicts the participants' age distribution.

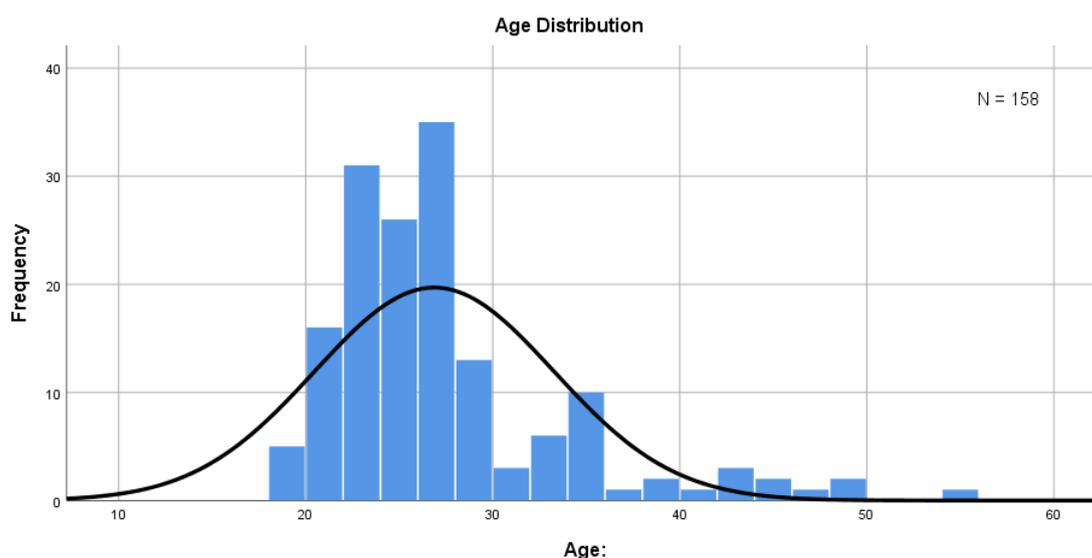


FIGURE 3 Age distribution

The majority of participants were 20-30 years old. From the participants, 67 were between the ages of 19-24 (42,4%), while 82 were between the ages of 25-39 (51,2%) and 10 participants were between the ages of 40-54 (6,4%). The mode of the age distribution was 27, with a frequency of 19. The youngest participant was 19 years old, while the oldest was 54 years old. The mean of the age distribution was 26,87, and the standard deviation was 6,40.

In terms of education, the distribution shows that many of the participants were highly educated. The distribution is shown in the figure below (Figure 4).

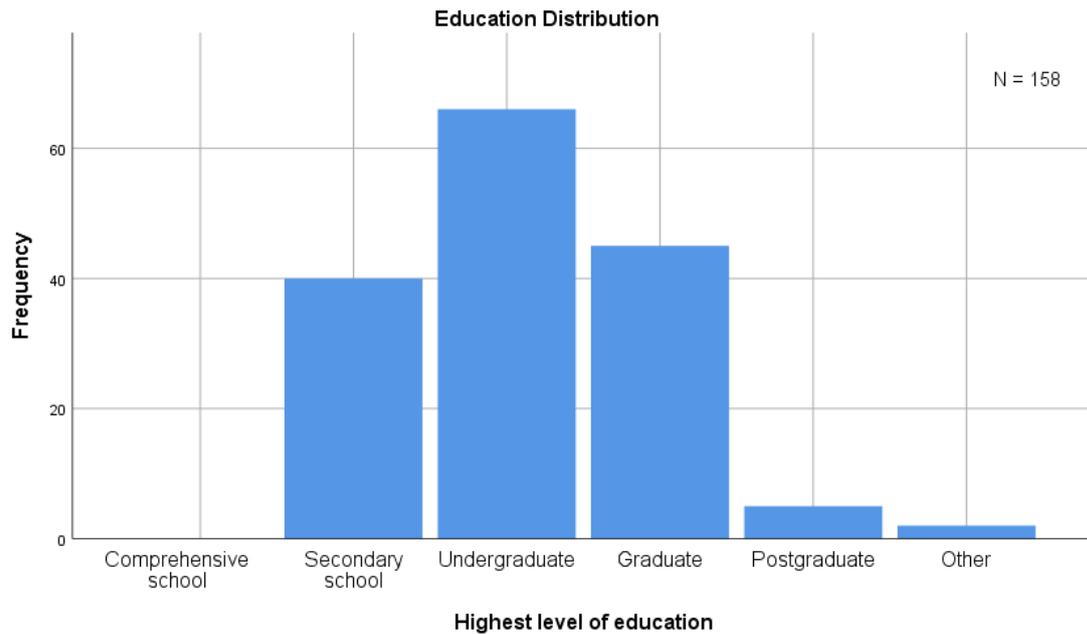


FIGURE 4 Level of education

From the participants, 40 (25,3%) stated secondary school as their level of education, while 66 (41,8%) were at the undergraduate level and 45 (28,5%) participants were at the graduate level. There were also 5 (3,2%) participants at the postgraduate level and 2 (1,3%) stated their level of education as other. None of the 158 participants chose the option of comprehensive school as their level of education.

The biggest group in terms of occupation was clearly students, but many were also in work-life already. Figure 5 describes the distribution of occupation among the participants.

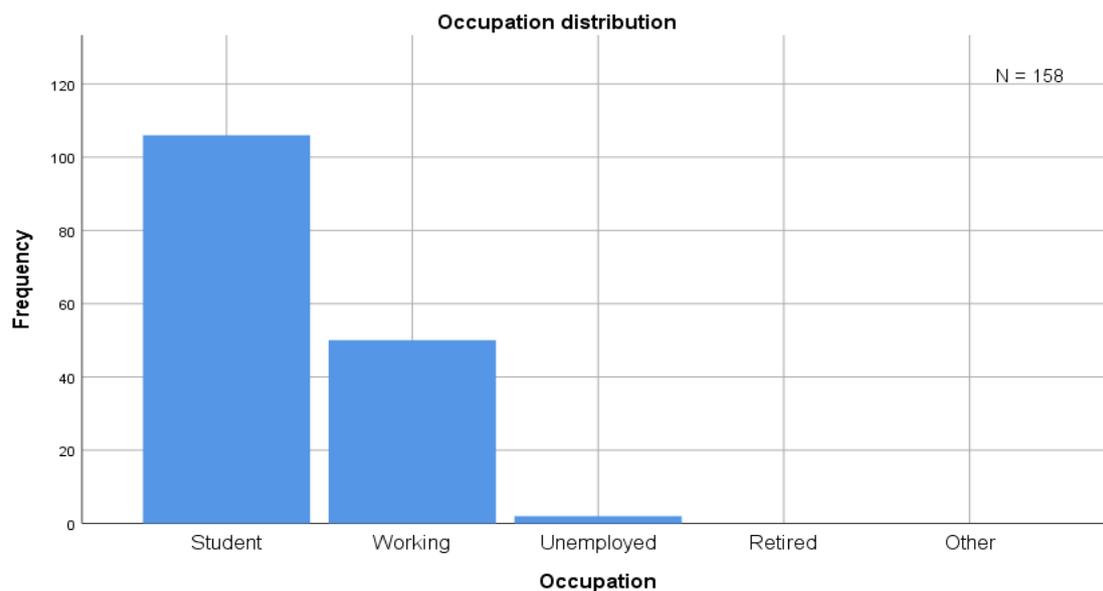


FIGURE 5 Occupation distribution

From the participants, 106 (67,1%) were students, while 50 (31,6%) stated their occupation as employed. There were also 2 (1,3%) participants who were unemployed at present. No participants were either retired or stated their occupation as other.

The participants were also asked about how often do they play video games or gamble. The frequency was measured on a scale of 1 to 5, where 1 was never and 5 was often. Most of the participants were quite familiar to video games, as 104 (65,8%) stated that they play video games often. Only one participant (0,6%) said that they never play video games. From the middle values, 7 participants (4,4%) answered value 2, while 17 (10,8%) chose value 3 and 29 (18,4%) chose value 4. The answers were quite the opposite on the gambling side, as 54 participants (34,2%) said that they never gamble, while only 4 (2,5%) said that they gamble often. The values between distributed so, that 72 participants (45,6%) answered value 2, while 23 (14,6%) chose value 3 and only 5 (3,2%) chose value 4. Additionally, the participants were asked, how much time do they spend playing video games in a week. The answers scattered quite evenly, as 22 participants (13,9%) said they play 5 hours or less, while 50 (31,6%) said that they play about 10 hours a week. Furthermore, 38 participants (24,1%) stated that they play about 20 hours a week, while 19 (12,0%) answered 30 hours. Lastly 28 (17,7%) chose more than 30 hours a week and one participant (0,6%) answered none.

The survey also attempted to examine the spending habits of the participants regarding gambling, microtransactions in general and specifically loot boxes. The participants were asked how often they spend money on said three items and on average, how much money they spend each time. The spending frequency for each category is depicted in the table below (Table 5) and the amount of money spent on each activity per time is depicted in the following figure (Figure 6).

TABLE 5 Spending frequency

N = 158		Once a week	Once a month	Once every 3 months	Once every 6 months	Once a year	Never
How often do you spend money on gambling?	Count	25	35	14	19	29	36
	Row N %	15,8%	22,2%	8,9%	12,0%	18,4%	22,8%
How often do you spend money on microtransactions?	Count	7	22	43	23	42	21
	Row N %	4,4%	13,9%	27,2%	14,6%	26,6%	13,3%
How often do you spend money on loot boxes?	Count	3	7	21	18	42	67
	Row N %	1,9%	4,4%	13,3%	11,4%	26,6%	42,4%

For gambling spending frequency, 25 participants (15,8%) said they spend money about once a week, 35 (22,2%) said once a month, 14 (8,9%) said once

every 3 months, 19 (12,0%) said once every 6 months, while 29 (18,4%) said once a year. Also, 36 participants (22,8%) said that they never spend money on gambling. For microtransaction spending frequency, 7 participants (4,4%) said they spend money about once a week, 22 (13,9%) said once a month, 43 (27,2%) said once every 3 months, 23 (14,6%) said once every 6 months, while 42 (26,6%) said once a year. Additionally, 21 participants (13,3%) said that they never spend money on microtransactions. For loot box spending frequency, 3 participants (1,9%) said they spend money about once a week, 7 (4,4%) said once a month, 21 (13,3%) said once every 3 months, 18 (11,4%) said once every 6 months, while 42 (26,6%) said once a year. This leaves quite a large group of 67 participants (42,4%) that said they never spend money on loot boxes.

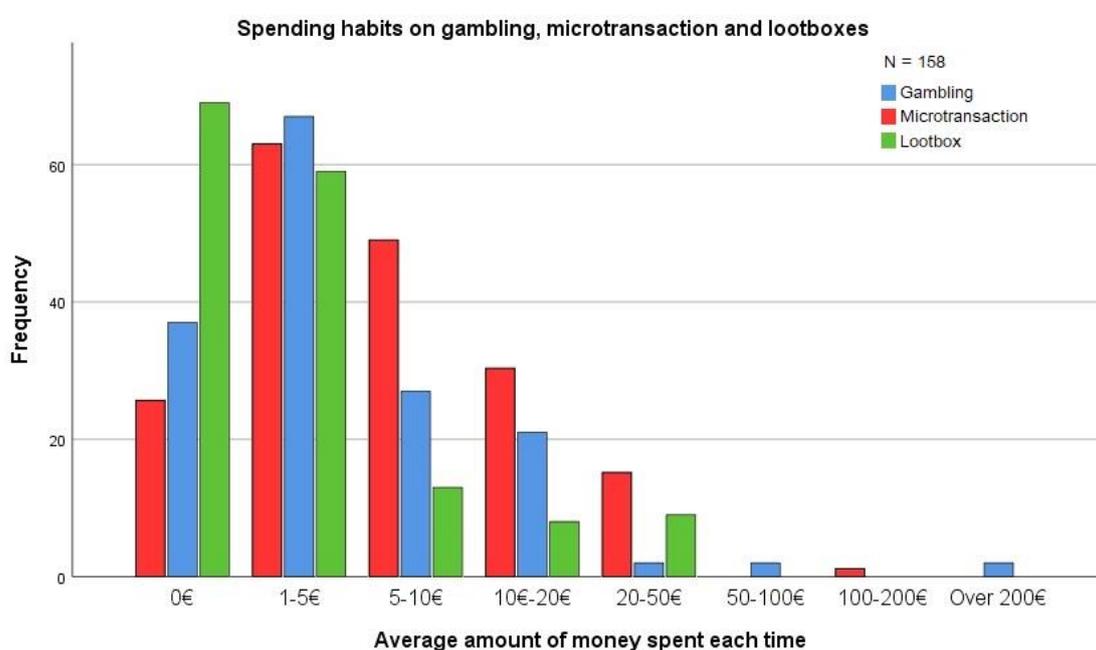


FIGURE 6 Spending habits on gambling, microtransactions and loot boxes

In the case of spending amounts, there were eight options varying from 0€ to over 200€ per each time. About gambling, 37 participants (23,4%) said that they spend 0€ each time, while 67 (42,4%) said to spend 1-5€. 27 participants (17,1%) said 5-10€ and 21 (13,3%) chose 10-20€. The higher amounts of 20-50€, 50-100€ and over 200€ each received 2 answers (3,9%) in the case of gambling. On the other hand, with microtransactions 22 participants (13,9%) said that they do not spend any money on them. The biggest group was 1-5€ with 54 answers (34,2%), while 42 (26,6%) chose 5-10€. 26 participants (16,5%) said 10-20€ and 13 (8,2%) said 20-50€. There was also one participant (0,6%) who said to spend 100-200€ each time on microtransactions, while no one answered over 200€. In the case of loot boxes, 69 participants (43,7%) said to never spend money on loot boxes, which was the largest group in this category. Additionally, there was no answers on 50-100€, 100-200€ or over 200€ options. However, 59 participants (37,3%) stated that they usually spend 1-5€ on loot boxes each time, while 13

(8,2%) answered 5-10€, 8 (5,1%) said 10-20€ and finally 9 participants (5,7%) chose the option of 20-50€.

6.2.2 Motivation correlations

In this part of the results, all the correlations between sum variables are presented. The correlations were calculated using Pearson's correlation. The following figure (Figure 7) presents the correlation regarding monetary motivations between each theme. Monetary motivations include characteristics like winning, making profit or "hitting the jackpot". These can be applied to both gambling and loot boxes, since they both include a possibility to win more than you spend. However, with microtransaction monetary motivations are slightly different. There is no possibility to win anything with microtransactions, so the monetary motivations are about pricing and perceived value of the virtual product.

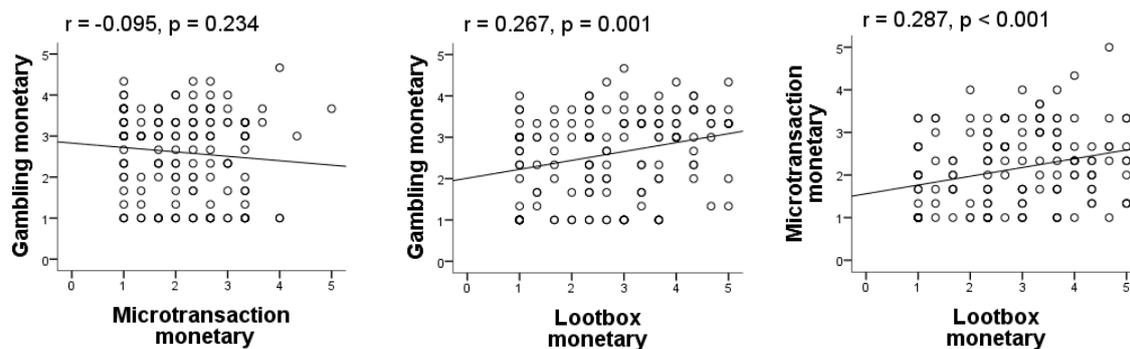


FIGURE 7 Monetary motivations

There is a statistically significant correlation between gambling and loot box monetary motivations ($r = ,267$, $p = ,001$); and between microtransaction and loot box monetary motivations ($r = ,287$, $p < ,001$). However, the correlations on both occasions are very moderate. There is a negative correlation between gambling and microtransaction monetary motivations ($r = -,095$, $p = ,234$), which can be explained with the differing characteristics in the sum variables.

The factors measuring social motivation included characteristics like competing with others, associating with friends and self-expressing. Correlations between social motivations are presented in the following figure (Figure 8).

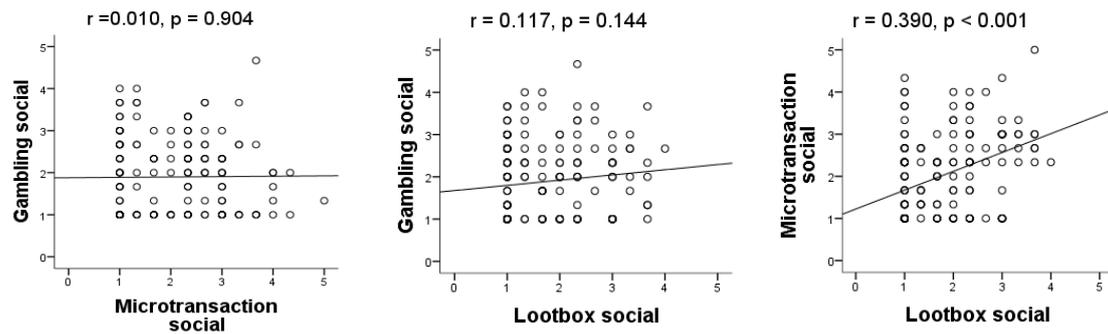


FIGURE 8 Social motivations

In this category, gambling did not seem to correlate with the other two variables. There was no statistical significance between gambling and microtransaction ($r = .010$, $p = .904$), nor between gambling and loot boxes ($r = .117$, $p = .144$). However, there was statistically significant correlation between microtransactions and loot boxes social motivations ($r = .390$, $p < .001$). These results can be partially explained with some differences in the sum variables. Microtransactions and loot boxes weigh more on self-expression and displaying oneself to others, while with gambling aspect, it is more about socializing and conversing with other people.

Since gambling and loot box sum variables were based on the same model, the five factor gambling model, while microtransaction sum variables were based on the theory of consumption values, the models included some differing factors. Excitement, amusement and avoidance factors were only present in the five factor gambling model, while theory of consumption values included functional and emotional factors. These differing factors have been separated in the results so that in the following figure (Figure 9), remaining three factors from the five factor model are compared between gambling and loot boxes. Later on, the remaining factors from theory of consumption values are presented in figure 10.

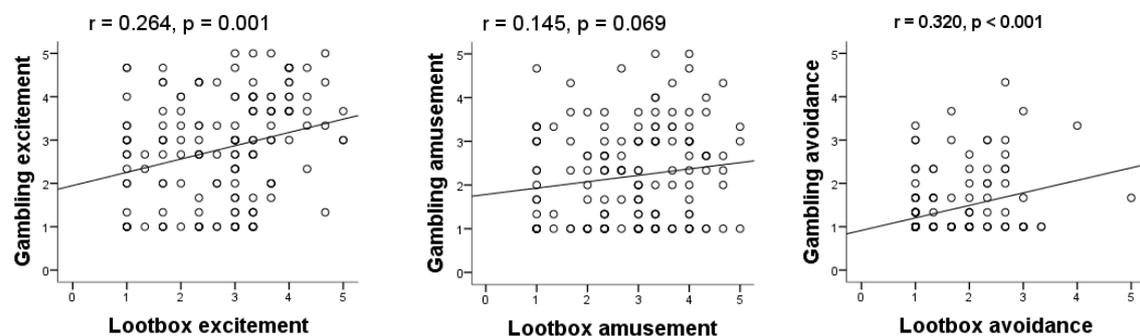


FIGURE 9 Gambling & Loot box motivations

The excitement factor weighs on characteristics like uncertainty of the outcome, thrill in risk taking and the sheer excitement of the act. There was a slight statistically significant correlation between gambling and loot boxes excitement fac-

tor ($r = ,264, p = ,001$). The amusement factor includes attributes like having fun, enjoying and liking the activity. The correlation between gambling and loot box amusement factor was not statistically significant ($r = ,145, p = ,069$). It seems that amusement is a more prominent spending motivation with loot boxes than with gambling. Finally, the avoidance factor was about escaping stress, coping with problems and relieving boredom. There is a statistically significant correlation between gambling and loot box avoidance factor ($r = ,320, p < ,001$).

In the next figure (Figure 10), the remaining factors from the theory of consumption values are presented. The most prominent correlations were chosen for the figure, while those which did not pose statistical significance were left out.

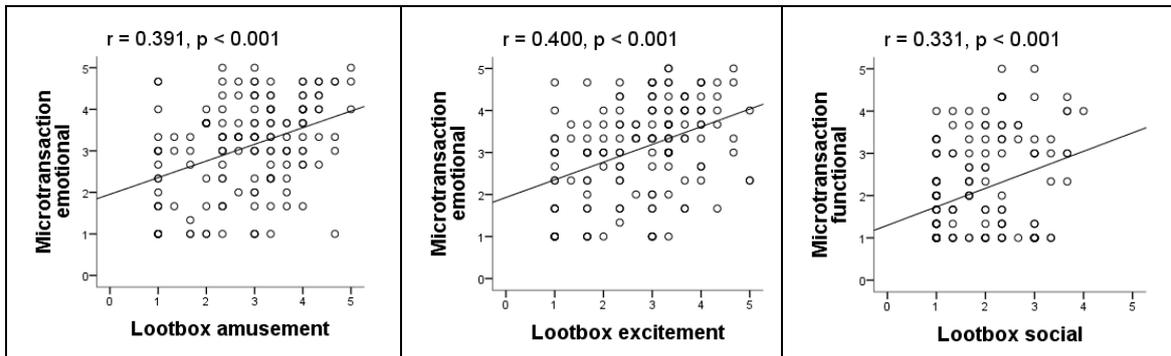


FIGURE 10 Correlations for emotional and functional microtransaction motivations

The emotional factor from the theory of consumption values included attributes like self-expressing through character, increasing enjoyment in the game and feeling happiness. This factor had high correlation with loot box amusement and excitement factors. There was statistically significant correlation with emotional and amusement factors ($r = ,391, p < ,001$), and with emotional and excitement factors ($r = ,400, p < ,001$). The functional factor consisted of attributes like fastening progression, increasing character power and winning more easily. This factor correlated with every factor from loot box category, while the highest statistically significant correlation was found with loot box social factor ($r = ,331, p < ,001$).

The participants were also asked about their opinions on each of the three themes. Opinions were also measured by using Likert-scale questions and constructing them into sum variables. For each theme, there was both positive and negative opinion sum variable. The correlations between opinions on gambling, microtransaction and loot boxes are presented in the following figure (Figure 11).

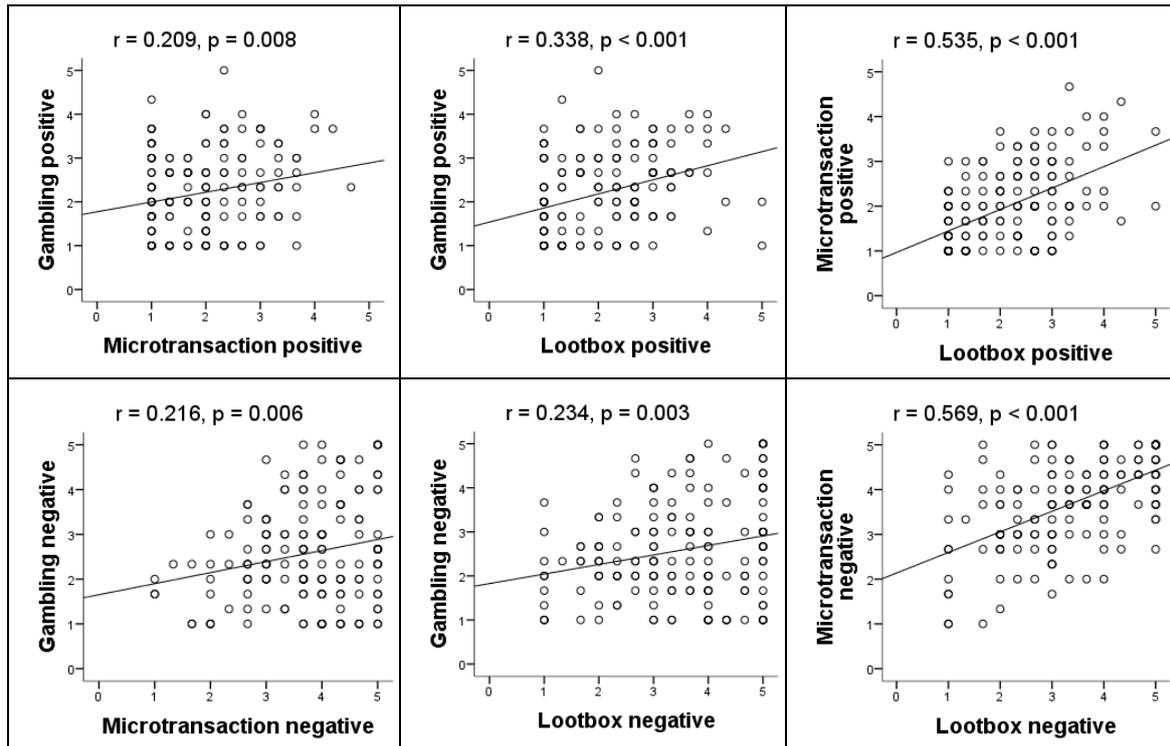


FIGURE 11 Opinion correlations

Between gambling and microtransactions there was no statistically significant correlation with positive ($r = .209, p = .008$) nor negative opinions ($r = .216, p = .006$). This suggests, that they do not affect each other. On the other hand, opinions about loot boxes correlated with both gambling and microtransactions opinions. The correlation between positive opinions about gambling and loot boxes were statistically significant ($r = .338, p < .001$). Between negative opinions, the correlation was slightly less significant ($r = .234, p = .003$). Moreover, the correlations between microtransactions and loot boxes had even stronger correlation. The correlation between positive opinions about microtransactions and loot boxes were statistically significant ($r = .535, p < .001$), as were negative opinions too ($r = .569, p < .001$). All in all, the participants seemed to react quite negatively to both microtransactions and loot boxes, while the opinions about gambling were a bit more neutral.

6.2.3 Open questions

In this part of the results section, the open questions on motivations are analyzed and presented. Open questions were used to give the participants option to answer in their own words, what motivates them to spend money on gambling, microtransactions or loot boxes. The participants were asked to list their top three motivators for each theme. These answers were then analyzed and the motivations were transformed into numerical data using descriptive coding. For gambling, there was a total of 15 different motivation categories found.

These are presented in the table below (Table 6) accompanied with example answers.

TABLE 6 Gambling motivation categories

N = 221		
Motivation	N, %	Example answer
Chance to win money	51 (23,1%)	"Possibility of winning."
Excitement/Thrill	38 (17,2%)	"Betting makes watching sports events more exciting."
Jackpot/Big winnings	29 (13,1%)	"The possibility to "win big" and the possibility of being able to turn it into a story."
Pleasure/Fun	21 (9,5%)	"Gambling is a fun activity."
Friends/Social	20 (9,0%)	"It's fun to gamble with friends."
Spending time	18 (8,1%)	"It's an activity to pass time."
Pocket change/Extra money	12 (5,4%)	"I have a lot of small change so I might as well spend a couple euros and try to win some more."
Boredom	9 (4,1%)	"Being bored."
Alcohol	6 (2,7%)	"While being drunk you don't care about risks anymore."
Competition	5 (2,3%)	"Competitive aspect."
Game aspect	3 (1,4%)	"I enjoy games/gamification aspects in online gambling"
Skill/Knowledge	3 (1,4%)	"I'm capable of using my knowledge in certain sports."
Easy access	2 (0,9%)	"Online casinos are easily accessible."
Luck	2 (0,9%)	"Just wanting to see if I have any luck."
Charity	2 (0,9%)	"Lottery money goes for helping people."

The chance to win money was the most common motivation for gambling, as it was answered 51 times in total (23,1%). The second most common motivation for gambling was excitement or thrill with 38 answers (17,2%). Many participants associated this motivation with following sports games, as there is the possibility to bet on the winning team, which can make watching the game more engaging. Thirdly, many of the participants specifically stated, that they hope to win the jackpot for example from lottery. Winning big was therefore separated from chance to win money as its own motivation category. Winning big was chosen 29 times (13,1%). Other quite common motivations were pleasure and fun, friends or social reasons, spending time and having extra pocket change to use.

For microtransactions, there was a total of 20 different motivation categories found. These are presented in the table below (Table 7) accompanied with example answers.

TABLE 7 Microtransaction motivation categories

N = 237		
Motivation	N, %	Example answer
More content	52 (21,9%)	"New maps or other content and their added value to gameplay."
Character customization	38 (16,0%)	"I like that my character looks nice."

Supporting the game	30 (12,7%)	"Supporting developers of well-crafted, non-predatory free-to-play games."
Speeding progression	19 (8,0%)	"I want to skip a hard part."
Enjoyment/Fun	17 (7,2%)	"I purchase, if it increases the game enjoyment."
RRMs/Chance	14 (5,9%)	"Possibility to get something valuable from a loot box for little money."
Performance	13 (5,5%)	"I want more power or energy faster."
Reasonable pricing	10 (4,2%)	"The offer should be affordable, I never buy offers over 5€."
Limited time offer	8 (3,4%)	"Sometimes I buy skin packs for a special offer price."
Friends/Social	7 (3,0%)	"I buy, because my friends do too."
Competitive advantage	5 (2,1%)	"Level out the pay-to-win field."
Items real life value	5 (2,1%)	"Getting really expensive virtual items that can be sold for profit."
Exclusive items/content	4 (1,7%)	"Getting unique nice items."
Necessity	4 (1,7%)	"It is necessary for the game."
Spare money	3 (1,3%)	"Good use for left over cash on Steam."
Impulsiveness	3 (1,3%)	"Momentary impulse."
Gifting friends	2 (0,8%)	"I have bought some loot boxes as Christmas gifts for foreign friends."
Collecting	1 (0,4%)	"Collecting in-game items."
Easy access	1 (0,4%)	"Items are easy to buy inside the game."
Getting rid of ads	1 (0,4%)	"Removing ads from the game."

In the case of microtransactions, the most commonly answered motivation was getting more content in the game, which was chosen 52 times (21,9%). More content can be anything from new maps or levels to other downloadable content, which give the player more to experience. Second most common motivation was character customization with 38 answers (16%). Players tend to like making their character look unique and stand out from others. Also, quite many participants (N = 30, 12,7%) said that they buy virtual goods in order to support the developers of a good game. This is especially common with free-to-play games where the developers rely on microtransactions as the main source of income. Otherwise, some of the more common motivations were for example speeding progression, enjoyment and fun, random reward mechanisms and performance.

For loot boxes, there was a total of 21 different motivation categories found. These are presented in the table below (Table 8) accompanied with an example answer for each category.

TABLE 8 Loot box motivation categories

N = 157		
Motivation	N, %	Example answer
Chance to win rare items	27 (17,2%)	"I want to get something good from them."
More content	17 (10,8%)	"To unlock more playable content."
Excitement	15 (9,6%)	"The contents of the box is a mystery, which is exciting."

Character customization	13 (8,3%)	"Cosmetic items are sometimes very elegant and beautiful."
Items real life value	10 (6,4%)	"Possibility to make money by selling the items."
Necessity	8 (5,1%)	"In trading card games, buying packs is kind of necessity."
Reasonable price	8 (5,1%)	"They would have to be cheap and useful, so I would buy them."
Use of in-game currency	7 (4,5%)	"I may buy loot boxes if they can be bought with in-game currency."
Supporting the game	7 (4,5%)	"To support the creators, who keep developing the game."
Performance	5 (3,2%)	"Getting powerful items from the box."
Limited time offer	5 (3,2%)	"Bundles and cheap offers."
Exclusive items/content	5 (3,2%)	"To get exclusive items (for ex. limited time only items during events)."
Spare money	5 (3,2%)	"Having extra balance on account, like 2-4€ on Steam."
Competitive advantage	4 (2,5%)	"I buy loot boxes, so I could compete with others."
Speeding progression	4 (2,5%)	"Saving time by avoiding grinding."
Friends/Social	4 (2,5%)	"Peer pressure, as in wanting to help my alliance do better."
Enjoyment/Fun	4 (2,5%)	"If I enjoy the game enough, I might spend some money."
Impulsiveness	3 (1,9%)	"Impulsive behavior."
Boredom	3 (1,9%)	"Boredom."
Getting items faster	2 (1,3%)	"You can enjoy the items quite a bit faster if you spend some money."
Gifting friends	1 (0,6%)	"I have bought them as Christmas gifts for my friends."

From the three themes, loot boxes gathered the least answers for the open question on motivations (N = 157), while it had the most motivation categories. The top three motivations for loot boxes were chance to "win" rare items (N = 27, 17,2%), more content (N = 17, 10,8%) and excitement (N = 15, 9,6%). Players hope to get the rarest items from loot boxes, while also hoping for new content. Also, due to the mysterious nature of loot boxes, they can be exciting to open. Other quite common motivations were character customization, like with microtransactions, but also the items real life value. This indicates that some people also hope to make profit by opening loot boxes.

The participants were also asked, whether or not they thought loot boxes are a form of gambling. Results were quite unanimous, as shown in the figure below (Figure 12).

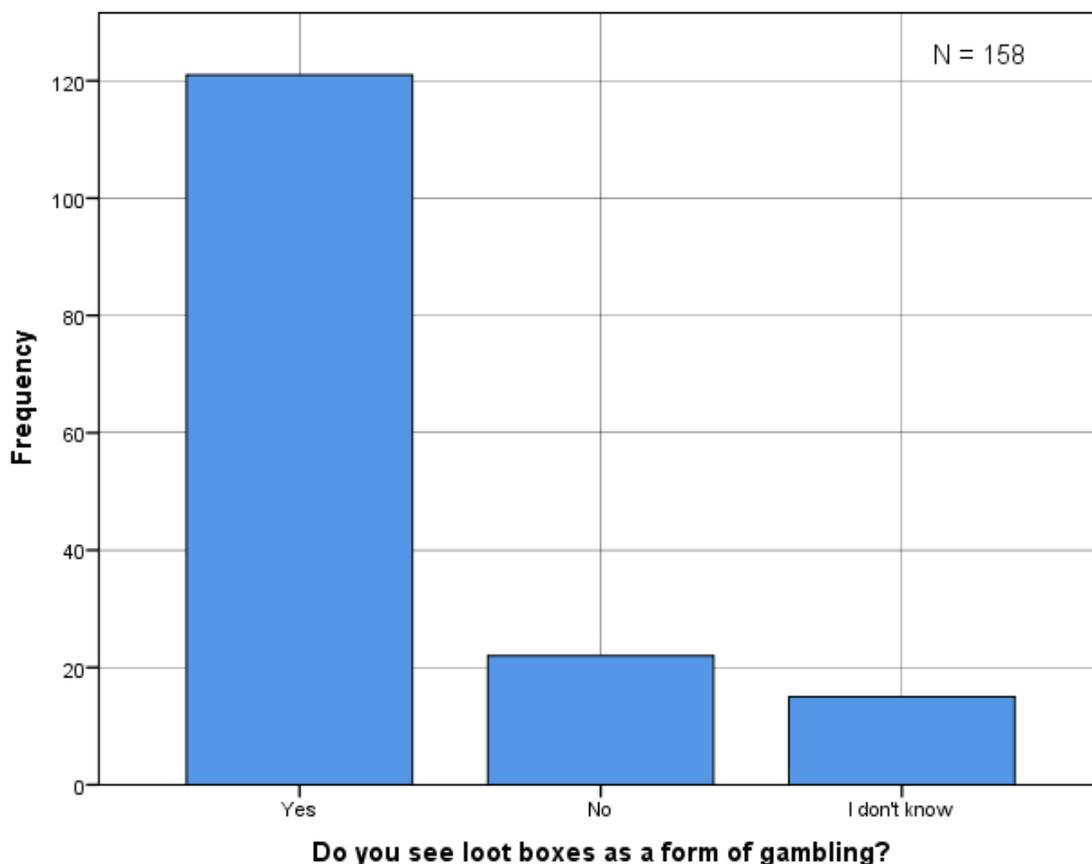


FIGURE 12 Loot boxes a form of gambling

From 158 participants, a total of 121 people answered that loot boxes are a form of gambling in their opinion. There were also 22 participants who thought that loot boxes are not gambling, while 15 did not have clear opinion on the matter. This question was followed with an elaborative open question, where the participants would tell why they thought one way or the other. Most participants who thought loot boxes are comparable to gambling, said for example: “You pay money without knowing what you get”, “You do not know the result beforehand and because the contents have varying values” “There is a chance to get this rare item that you can sell for way more than you spend on the loot box” and “There is a monetary value to be gained from the boxes with an element of chance”. The requirement for paying, the random chance of getting something valuable, but not being guaranteed to get it and ability to make profit seem to be the most common reasons of why people connect loot boxes with gambling. Additionally, some participants were also concerned about the addictive properties of loot boxes and that they are designed to exploit youngsters: “They are clearly used to prey on children and teens who do not have a properly developed impulse control” and “Paying money for something that doesn’t tell what you’re going to get can be addictive”.

On the other hand, there were also some people who thought that loot boxes are not gambling. To support their argument, they said for example: “Loot boxes don't promise any real return as money”, “You always win some-

thing from a loot box” and “The fact that something is randomized doesn't automatically make it gambling”. Additionally, the fact that most of the times, the items can't be exchanged into real life money prevents the aspect of making profit, so in these cases loot boxes could not be considered as gambling.

When the participants were asked, why would they buy a loot box instead of choosing the specific item from the games store, the most common answer was “I wouldn't”. Some participants thought that someone might like buying loot boxes for the excitement and fun factors or the possibility to get good items for less money, than they would from the store.

7 DISCUSSION

This study investigated gambling, microtransactions and loot boxes, and the possible connections between these three categories. A two part research was conducted, using both literature review and empirical means to find out, what kind of connections can be found. The literature review attempted to explain what loot boxes essentially are and how previous studies have discussed the connection to gambling. It appeared that there was very little research done on the subject at present. The empirical study was conducted via an internet survey. The survey was used to find out, what motivates consumers to spend money on gambling, microtransactions and loot boxes. These connections were then compared to each other, in order to find out if there were similarities, especially between gambling and loot boxes. Additionally, it was found out that there is very little data available on people's actual spending habits on microtransactions or loot boxes, so it was included in the survey.

According to the empirical data, there were actually many similarities between gambling and loot box spending motivations, while also between microtransaction and loot box motivations. Although the correlations were in most cases very moderate, the highest correlations between gambling and loot boxes were in monetary, excitement and avoidance factors. It was expected, that specifically monetary and excitement factors would correlate between these categories, since the nature of loot boxes is very similar to a lottery ticket for example. People wish to win money or valuable goods from gambling games and loot boxes, while they also enjoy the thrilling experience in taking risks. However, the avoidance factor correlates because avoiding problems or escaping stressful reality was not seen as a prominent motivator to gamble or purchase loot boxes.

On the other hand, there was no significant correlation between social or amusement factors between gambling and loot boxes. In the case of amusement factor, it seems that people see opening loot boxes and receiving items from them as a more fun activity than gambling. This could indicate that people see gambling as a more serious activity than opening loot boxes. Losing in gambling can be more frustrating, since it means that the person directly loses their money, while with loot boxes, it merely means that the person receives some

other items, than what they hoped for. In addition, loot boxes are designed to be fun to open.

The fact that there was no significant correlations regarding the social factor between gambling and the other two categories is interesting, even though in each category individually, social reasons were seen as a positive motivator. However, in the case of microtransactions and loot boxes, the correlation is significant. In previous research, it has been suggested that buying virtual goods in online games is highly social activity, since it involves expressing oneself through a character. Also, it has been assumed that a player's friends and other social circles increase their purchase intention by social pressure (Lehdonvirta, 2009). The motivations seem to be quite similar for both microtransactions and loot boxes. Supposedly, gambling does not correlate with these motivations, since the social aspect with gambling is quite different. Hamari et al. (2017) had previously studied purchase motivation regarding virtual goods. Their findings are briefly presented in a table earlier in this study (table 1). Comparing results from their study and this research at hand, almost every motivation presented in the previous research was also present in this one. From their six factors of concrete purchase motivations, only "indulging children" did not appear at all. This is probably due to the young age distribution in this research.

Zendle and Cairns (2018) had previously found connections between problem gambling and the amount of money spent on loot boxes. According to their research, it may be that problem gamblers are more willing to also spend money on loot boxes in addition to gambling. They also suggested that loot boxes could possibly incite problematic gambling behavior in gamers. This research did not study people's gambling problems per se, but their spending habits, motivations and opinions. It was found out, that people who gamble and have positive opinions about gambling, also buy loot boxes and have positive opinions about them. On the other hand, those who said they do not gamble or did not like gambling, also felt similarly about loot boxes. Additionally, these participants thought that loot boxes are gambling and that was the reason to not buy or like them. The motivations were also in line, as those who were active gamblers also bought loot boxes in hopes for receiving expensive items, which could be sold onwards for high price.

This study also examined people's money spending habits on gambling, microtransactions and loot boxes. Previously, Lovell (2011) has studied spending habits on microtransactions and suggested the ARPPU theory, which described three groups of consumers making in-game purchase. According to Lovell (2011), minnows should represent about 50% of consumers, dolphins 40%, while whales 10%. By applying this theory to the empirical data of people's spending habits, it can be seen that inside this particular study sample, ARPPU theory works quite well. In the collected data, for gambling there were 55,4% minnows, 39,6% dolphins and 5,0% whales. For microtransactions, minnows held 39,7%, dolphins 50,0% and whales 10,3%. In the case of loot boxes, there were 66,3% minnows, 23,6% dolphins and 10,1% whales. Those participants, who answered that they don't spend money on some category were left

out in said category, since they do not have ARPPU rating. This means that 38 participants in gambling, 22 participants in microtransactions and 69 participants in loot box category were left out in ARPPU examination.

Loot boxes have raised concerns about various risks towards vulnerable audiences, such as gambling addicts and children. Nielsen & Grabarczyk (2018) suggested that such gambling phenomena as gambler's fallacy, near misses, losses disguised as winnings and illusion of control could be connected to loot box functions. Some of these phenomena and concerns also surfaced amongst the collected empirical data, especially gambler's fallacy and illusion of control were identified. For example, some of the survey participants suggested that people might think they can somehow beat the odds with loot boxes or that they simply feel lucky. Also, some suggested that when the consumer does not get the wanted item from the loot box, they might think it is somehow easier to receive from the next box. In terms of concerns, some participants thought that loot boxes are designed to prey on children and teens who do not have a properly developed impulse control. Many also said that loot boxes are designed to be addictive and that they incite similar psychological behavior as gambling. There were some participants, who thought that loot boxes cannot be classified as gambling, but nevertheless agreed that the potential addiction and problems arising from loot boxes should be treated similarly as with gambling. As much of the concerns about loot boxes relate to children being exposed to a form of gambling, the clearest solution to reduce this exposure would be to include loot boxes only in games for mature audiences. In games allowed for children, loot boxes should not be sellable items, but they should only be free rewards for playing the game or not present at all. This could at least partially prevent children's access to such predatory devices. Additionally, spending too large amounts of cash on loot boxes could be prevented by showing consumers their total amount of spent money on microtransactions and by presenting the odds for the items.

The results of this study are interesting, but also expected. It was a pre-assumption for this study, that there will be found some kind of a connection between loot boxes and gambling. It is understandable that not all countries are ready to declare loot boxes as gambling by law and it's not even clear should they. The sheer act of opening loot boxes has become a form of entertainment due to the excitement they hold. Similar excitement that can be felt when participating in regular gambling activities. This can be seen for example in the fact that people make videos or stream themselves opening these boxes. It is true that loot boxes might need regulations and further investigation, but it is also important to understand, that not all loot box systems are the same, as there can be multiple differing features in them (Nielsen & Grabarczyk, 2018). For example, such loot boxes including content, which does not affect gameplay in any way or the contents can't be cashed out, do not possess gambling like elements. This is why they should not be declared as gambling by law without properly defining the specific systems, as the legislation might end up influencing also

those systems, which do not actually possess elements of gambling. Also too narrow definition could end up being easily circumvented (Abarbanel, 2018).

8 CONCLUSION

Loot boxes are one of the newest types of video game microtransactions, which appear in a large number of games today. Recently, they have been under discussion due to their claimed similarities to gambling. These similarities are the requirement for using real money, the random event of receiving virtual goods and the ability to sell the goods or use them for further gambling. Loot boxes seem to be very similar to gambling by their mechanics and psychological effects. Hence, loot boxes are said to be a predatory device, which rips children of their or their parents' money and teaches them to gamble through games.

The aim of this research study was to investigate connections between loot boxes and gambling games. The research problem consisted of three research questions: 1) What kind of connections can be found between loot boxes and gambling? 2) What motivates consumers to spend money on gambling games, microtransactions or loot boxes? 3) How do the motivations of spending money vary between loot boxes and gambling games? The first question was studied via literature review, while the two latter questions were examined via empirical study.

Connections between loot boxes and gambling were in fact found, as according to literature, certain type of loot boxes possesses many similar elements as gambling games do. The specific type of loot boxes, which could be legally compared to gambling games require at least purchases made with real money, receiving random items of different value and being able to sell these items for real money. The basic function of any loot box mechanic can be seen as psychologically comparable to gambling. They are designed to build up excitement for the random outcome of opening the box, which is delivered with intriguing sound effect, colors, fireworks et cetera. The study provides insight to the controversy about loot boxes being gambling by presenting arguments from both sides. However, the results lean more to the side, which claims loot boxes are in fact gambling. Due to this fact, it is necessary to investigate loot boxes further and provide a clearer guideline, how they should be treated as. It is clear, that game developers are not ready to remove this fine-tuned money machine from games altogether, so there is a need to at least regulate them somehow.

As for the empirical questions, an online survey was used for data collection. The survey received a total of 158 participants, from which a large part was university students. There were multiple motivations found for each category. The top three motivations for gambling were the chance to win money, excitement or thrill and hitting the jackpot or big winnings. For in-game microtransactions, the top three spending motivations were receiving more content, character customization and supporting the game. Loot boxes have similarities to both of the previous categories, as the top four motivations for them were the chance to win rare items, receiving more content, excitement or thrill and character customization. The chance of winning something valuable was clearly the top motivator for loot boxes, while the latter three motivations were quite equally present.

According to the empirical results, there were both similarities and differences found between the three categories. Gambling and microtransactions in general have near to nothing in common when it comes to spending motivations, whereas loot boxes had much similarities with both gambling and microtransactions. The results show, that whether or not there is a possibility to receive money from loot boxes, people are motivated to buy them in order to “win” something or due to the similar excitement factor as with gambling. Additionally, people generally see loot boxes as a form of gambling due to their similar features, such as spending money on an uncertain outcome, where the consumer might or might not get any return of value for their money. On the other hand, loot boxes and microtransactions have many similarities, due to the fact that they are essentially the same thing. Loot boxes can be received via microtransactions. This being said, the similarities between the two categories were about receiving more content in the game, items to customize characters and supporting the game developers especially in free-to-play games.

This study has limitations regarding the lack of empirical knowledge on the topic. There has been very little research done about loot boxes and people’s spending habits on them before this study, so this should be investigated further. Also, it might be fruitful to examine the actual user behavior in a test environment with actual or simulated loot box purchases and openings. Although much of the concerns about loot boxes are connected to children’s exposure to gambling elements, there is little knowledge to be found on that subject. Another limitation of this study is that in the empirical part of the study, there were some differences between the sum variables, especially between microtransactions compared to the other two categories. This is due to using a different, more fitting theory for microtransaction questions. This might have caused some skewness in the correlations between microtransactions and the other two categories. However, the main idea of this research was to compare gambling and loot boxes, so this limitation does not really affect the results. Additionally, all the correlations gathered from the empirical data were quite moderate. This could have possibly been avoided by having more questions regarding each motivation factor. However, this would have made the survey considerably longer.

REFERENCES

- Abarbanel, B. (2018). Gambling vs. gaming: A commentary on the role of regulatory, industry, and community stakeholders in the loot box debate. *Gaming Law Review*, 22(4), 231-234.
- Atkinson, J. W. (1964). *An introduction to motivation*. Oxford, England: Van Nostrand.
- Beneš, M. (2018). Underage gambling in computer games. *Proceedings New trends and research challenges in pedagogy and andragogy NTRCPA18*, 81-90.
- Clark, L., Lawrence, A. J., Astley-Jones, F., & Gray, N. (2009). Gambling near-misses enhance motivation to gamble and recruit win-related brain circuitry. *Neuron*, 61(3), 481-490.
- Davidovici-Nora, M. (2013). Innovation in business models in the video game industry: Free-To-Play or the gaming experience as a service. *The Computer Games Journal*, 2(3), 22-51.
- Davidovici-Nora, M. (2014). Paid and Free Digital Business Models Innovations in the Video Game Industry. *Communications & Strategies*, (94).
- Demetriou, D. (2016). Maslow's Amazing Hierarchy of Needs. Retrieved on 10.12.2018 from: <https://www.unicaf.org/maslows-amazing-hierarchy-of-needs/>
- Drummond, A., & Sauer, J. D. (2018). Video game loot boxes are psychologically akin to gambling. *Nature Human Behaviour*, 2(8), 530-532.
- Egenfeldt-Nielsen, S., Smith, J. H., & Tosca, S. P. (2013). *Understanding video games: The essential introduction*. Routledge.
- Evers, E. R., Van de Ven, N., & Weeda, D. (2015). The hidden cost of microtransactions: Buying in-game advantages in online games decreases a player's status. *International Journal of Internet Science*, 10(1), 20-36.
- Gainsbury, S. M., Hing, N., Delfabbro, P. H., & King, D. L. (2014). A taxonomy of gambling and casino games via social media and online technologies. *International Gambling Studies*, 14(2), 196-213.
- Gainsbury, S. M., Russell, A. M., King, D. L., Delfabbro, P., & Hing, N. (2016). Migration from social casino games to gambling: Motivations and characteristics of gamers who gamble. *Computers in Human Behavior*, 63, 59-67.

- Granic, I., Lobel, A., & Engels, R. C. (2014). The benefits of playing video games. *American psychologist*, 69(1), 66.
- Griffiths, M. (1995). *Adolescent gambling*. Psychology Press.
- Griffiths, M. D. (2018). Is the buying of loot boxes in video games a form of gambling or gaming?. *Gaming Law Review*, 22(1), 52-54.
- Hamari, J. (2015). Why do people buy virtual goods? Attitude toward virtual good purchases versus game enjoyment. *International Journal of Information Management*, 35(3), 299-308.
- Hamari, J., Alha, K., Järvelä, S., Kivikangas, J. M., Koivisto, J., & Paavilainen, J. (2017). Why do players buy in-game content? An empirical study on concrete purchase motivations. *Computers in Human Behavior*, 68, 538-546.
- Ho, C. H., & Wu, T. Y. (2012). Factors affecting intent to purchase virtual goods in online games. *International Journal of Electronic Business Management*, 10(3).
- King, D., Delfabbro, P., & Griffiths, M. (2010). The convergence of gambling and digital media: Implications for gambling in young people. *Journal of Gambling Studies*, 26(2), 175-187.
- King, D. L., & Delfabbro, P. H. (2018). Predatory monetization schemes in video games (eg 'loot boxes') and internet gaming disorder. *Addiction*.
- Kinnunen, J. 2016. Reilusti addiktiivinen peli. Pelinkehittäjien näkökulma vastuullisiin free-to-play- ja rahapeleihin. *Yhteiskuntapolitiikka*, Vol. 81.
- Koeder, M. J., & Tanaka, E. (2017). Game of chance elements in free-to-play mobile games. A freemium business model monetization tool in need of self-regulation? In 28th European Regional Conference of the International Telecommunications Society (ITS): "Competition and Regulation in the Information Age", Passau, Germany, July 30 - August 2, 2017
- Lee, H. P., Chae, P. K., Lee, H. S., & Kim, Y. K. (2007). The five-factor gambling motivation model. *Psychiatry research*, 150(1), 21-32.
- Lehdonvirta, V. (2009). Virtual item sales as a revenue model: Identifying attributes that drive purchase decisions. *Electronic Commerce Research*, 9(1-2), 97-113.
- Lin, H., & Sun, C. T. (2011). Cash trade in free-to-play online games. *Games and Culture*, 6(3), 270-287.

- Lovell, N. (2011). ARPPU in freemium games. Online resource <http://www.gamesbrief.com/2011/11/arppu-in-freemium-games/> Retrieved 5.12.2018.
- Lussier, I. D., Derevensky, J., Gupta, R., & Vitaro, F. (2014). Risk, compensatory, protective, and vulnerability factors related to youth gambling problems. *Psychology of Addictive Behaviors, 28*(2), 404.
- Maslow, A. H. (1943). A theory of human motivation. *Psychological review, 50*(4), 370.
- Nielsen, R. K. L., & Grabarczyk, P. (2018). Are Loot Boxes Gambling? Digra '18 - *Proceedings of the 2018 Digra International Conference*.
- Oh, G., & Ryu, T. (2007, September). Game Design on Item-selling Based Payment Model in Korean Online Games. In *DiGRA Conference*, 650-657.
- Osathanunkul, C. (2015). A classification of business models in video game industry. *International Journal of Management Cases, 17*(1), 35-44.
- Pardee, R. L. (1990). Motivation Theories of Maslow, Herzberg, McGregor & McClelland. A Literature Review of Selected Theories Dealing with Job Satisfaction and Motivation. US Department of Education. Educational Resources Information Center (ERIC).
- Schwiddessen, S., & Karius, P. (2018). Watch your loot boxes!—Recent developments and legal assessment in selected key jurisdictions from a gambling law perspective. *Interactive Entertainment Law Review, 1*(1), 17-43.
- Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). Why we buy what we buy: A theory of consumption values. *Journal of business research, 22*(2), 159-170.
- The Statistical Portal. Video game monetization - Statistics & Facts. Retrieved from <https://www.statista.com/topics/3436/gaming-monetization/>
- Wagenaar, W. A. (2016). *Paradoxes of gambling behaviour*. Routledge.
- Wohn, D. Y. (2014, April). Spending real money: purchasing patterns of virtual goods in an online social game. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 3359-3368. ACM.
- Yoo, J. M. (2015). Perceived Value of Game Items and Purchase Intention. *Indian Journal of Science and Technology, 8*(19), 1-7.
- Zendle, D., & Cairns, P. (2018). Video game loot boxes are linked to problem gambling: Results of a large-scale survey. *PLoS ONE 13*(11), 1-12.

Zendle, D., & Cairns, P. (2018). Loot box spending in video games is linked to problem gambling severity. PsyArXiv <https://doi.org/10.31234/osf.io/u5dmr>

Zendle, D., McCall, C., Barnett, H., & Cairns, P. (2018). Paying for loot boxes is linked to problem gambling, regardless of specific features like cash-out and pay-to-win: A preregistered investigation. PsyArXiv <https://doi.org/10.31234/osf.io/6e74k>

ATTACHMENT 1 INTERNET SURVEY

Consumer motivations on gambling, microtransactions and loot boxes

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Welcome to the survey!

This survey investigates consumer behavior and motivations behind spending money on video game microtransactions (in-game purchases) and gambling activities. Participating in this survey requires, that the participant has encountered microtransactions in video games and/or has participated in any type of gambling games/activities.

The survey is part of my master's thesis in University of Jyväskylä and the collected data will be used for the purposes of the thesis. Answering is completely voluntary and anonymous. If you don't wish to finish the questionnaire, you may stop at any point. Finishing the survey takes approximately 10-15 minutes. Please consider each question with care. By accepting these terms, you give permission to use and store the answers anonymously for research purposes.

Tatu Latvala
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If you accept these terms, please press 'Next' to continue into the survey.

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First, please answer some general questions.

1. Gender

	Selection
Male	
Female	
Other	

2. Age

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3. Occupation

	Selection
Student	
Working	
Unemployed	
Retired	
Other	

4. Highest education

	Selection
Comprehensive school	
Secondary school	
Undergraduate	
Graduate	
Postgraduate	
Other	

5. How often do you play video games on any platform (e.g. PC, console, mobile)? Answer on a scale of 1 to 5, where 1 is "Never" and 5 is "Often".

	1	2	3	4	5	
Never						Often

6. Approximately, how much time do you spend playing video games in a week?

	Selection
5 hours or less	
10 hours	
20 hours	
30 hours	
More than 30 hours	
None	

7. How often do you play gambling game? Answer on a scale of 1 to 5, where 1 is "Never" and 5 is "Often".

	1	2	3	4	5	
Never						Often

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Next part of the survey is about gambling. In the context of this survey, by gambling it is referred to any type of gambling game online or offline, which involves the use of real money and the possibility to win more money. These can be for example lottery-type games, slot machines, sports betting, race wagering, poker, other casino-style card or table games.

8. Have you spent money on any form of gambling games? Answer on a scale of 1 to 5, where 1 is "Never" and 5 is "Often".

	1	2	3	4	5	
Never						Often

9. Which gambling activities have you taken part with? You may choose multiple options.

	Selection
Lottery	
Slot machines	
Sports betting	
Race wagering	
Poker	
Casino games	
Other	
None of the above	

10. On average, how much money do you spend on gambling each time?

	Selection
0€	
1-5€	
5-10€	
10-20€	
20-50€	
50-100€	
100-200€	
Over 200€	

11. How often do you spend money on gambling?

	Selection
Once a week	
Once a month	
Once every 3 months	
Once every 6 months	
Once a year	
Never	

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12. How well do the following statements describe your motivation to gamble? Answer on a scale of 1 to 5, where 1 is “strongly disagree” and 5 is “strongly agree”.

	1	2	3	4	5
I like to gamble to socialize with others.					
I want to win lots of money by gambling.					
I gamble, because others/friends do too.					
I want to compete with others.					
I hope to “hit the jackpot”.					
Gambling is exciting					
Gambling makes my life more enjoyable.					
I gamble to escape stressful reality.					
I like gambling as an activity					
Gambling is easy way to make money fast.					
I enjoy thrilling experience in risk taking.					
Betting money makes things more interesting.					
Gambling is a fun way to pass time.					
Gambling helps me cope with problems.					
Problems in life drive me into gambling.					

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13. What motivates you to gamble? Please list top three reasons. You may answer in English or Finnish.

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14. How well do the following statements describe your opinion about gambling? Answer on a scale of 1 to 5, where 1 is “strongly disagree” and 5 is “strongly agree”.

	1	2	3	4	5
I get excited when I think about gambling.					
Gambling is repulsive to me.					
I get irritated when being presented with gambling.					
I feel happy when engaging in gambling.					
Gambling is compelling to me.					
Gambling annoys me.					

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Next part of the survey is about microtransactions. Microtransactions are purchases made in a video game, in order to receive extra content or virtual goods in the game. The purchases are made with real money. The purchasable items

can be for example in-game currency, credits or tokens, cosmetic items for in-game avatar (e.g. skins), functional items (e.g. weapons, consumables, power ups), additional downloadable content (e.g. new maps, expansions) or random reward mechanisms (e.g. loot boxes, card packs, bundles).

15. Have you ever made an in-game purchase using real money? Answer on a scale of 1 to 5, where 1 is "Never" and 5 is "Often".

	1	2	3	4	5	
Never						Often

16. On average, how much money do you spend on microtransactions each time?

	Selection
0€	
1-5€	
5-10€	
10-20€	
20-50€	
50-100€	
100-200€	
Over 200€	

17. How often do you spend money on microtransactions?

	Selection
Once a week	
Once a month	
Once every 3 months	
Once every 6 months	
Once a year	
Never	

18. What items do you tend to spend money on when making in-game purchases? You may choose multiple options.

	Selection
In-game currency/credits/tokens	
Cosmetic items (e.g. skins for avatar)	
Functional items (e.g. weapons, consumables)	
Additional content (e.g. new maps, expansions)	
Random reward mechanisms (e.g. loot boxes, card packs, bundles)	
Other	
Nothing	

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How well do the following statements describe your motivation to purchase virtual goods? Answer on a scale of 1 to 5, where 1 is “strongly disagree” and 5 is “strongly agree”.

	1	2	3	4	5
I buy virtual goods to enjoy the game more.					
My friends bought virtual items, so I want to buy them too.					
I can make a better impression on other players.					
I want to progress the game faster.					
I want my character to look nice.					
I want to show other that I have rare items.					
I want to win more easily.					
A game items is a good product given the price.					
I want to increase my character power.					
Game items are worth more what they cost.					
Having items makes me feel happy.					
The prices of game items are reasonable.					

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20. What motivates you to spend money on microtransactions? Please list top three reasons. You may answer in English or Finnish.

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21. How well do the following statements describe your opinion about microtransactions? Answer on a scale of 1 to 5, where 1 is “strongly disagree” and 5 is “strongly agree”.

	1	2	3	4	5
Microtransactions make my gaming experience better.					
Microtransactions annoy me.					
I feel happy when engaging in microtransactions.					
I get irritated when being presented with microtransactions.					
I get excited when I think about microtransactions.					
Microtransactions make my gaming experience worse.					

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The last part of this survey is about loot boxes. Loot boxes are a type of random rewarding mechanism used in video games. Loot boxes come in many different forms, such as crates, chests, card packs, bundles etc. Loot boxes are usually either bought in a video game or they can be received through playing. By opening such box, the player is rewarded with random virtual items in the game.

22. Have you ever purchased any form of loot boxes? Answer on a scale of 1 to 5 where 1 is "Never" and 5 is "Often".

	1	2	3	4	5	
Never						Often

23. Which of the following features have you encountered with loot boxes? You may choose multiple options.

	Selection
Real money required for receiving/opening the box.	
Ability to sell received items for real money.	
Loot box items give gameplay advantage against others.	
Loot boxes can be bought with in-game currency	
Loot boxes are received by playing, but require purchasable key to open.	
Loot box shows what you could have got from it after opening.	
Loot boxes contain exclusive items.	
None of the above.	

24. On average, how much money do you spend on loot boxes each time?

	Selection
0€	
1-5€	
5-10€	
10-20€	
20-50€	
50-100€	
100-200€	
Over 200€	

25. How often do you spend money on loot boxes?

	Selection
Once a week	
Once a month	
Once every 3 months	
Once every 6 months	
Once a year	
Never	

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26. How well do the following statements describe your motivation to purchase loot boxes? Answer on a scale of 1 to 5, where 1 is “strongly disagree” and 5 is “strongly agree”.

	1	2	3	4	5
The items from loot boxes make the gameplay more fun.					
I buy/open loot boxes due to boredom.					
I hope to get valuable items, in order to sell them for real money.					
I buy loot boxes to get items that give me competitive advantage					
I buy loot boxes, because other/friends do too.					
I get disappointed, when I don't get anything valuable.					
I hope to receive more valuable items for cheaper price.					
I like opening loot boxes.					
I hope to get the rarest items, due to their value.					
Opening loot boxes is thrilling.					
I like buying loot boxes, because I don't know what I will get.					
I like to show others my loot box openings/watch others open loot boxes.					
I buy loot boxes to relieve stress.					
Opening loot boxes is fun.					
Opening loot boxes helps me cope with problems.					

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27. What motivates you to purchase loot boxes? Please list top three reasons. You may answer in English or Finnish.

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28. Why would you rather buy a loot box, in contrast to selecting the specific items from a store yourself? You may answer in English or Finnish.

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29.

How well do the following statements describe your opinion about loot boxes? Answer on a scale of 1 to 5, where 1 is “strongly disagree” and 5 is “strongly agree”.

	1	2	3	4	5
Loot boxes make my gaming experience worse					
Loot boxes annoy me.					
I get irritated when being presented with loot boxes					
I feel happy when engaging with loot boxes					
Loot boxes make my gaming experience better.					
I get excited when I think about loot boxes.					

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30. Have you ever sold your in-game items for real money?

	Selection
Yes.	
No.	

31. Why do you think people purchase loot boxes? You may answer in English or Finnish.

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32. Do you see loot boxes as a form of gambling?

	Selection
Yes.	
No.	
I don't know.	

33. Why do you think loot boxes are/are not a form of gambling? You may answer in English or Finnish.

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Thank you for participating in this survey! Please press 'submit' to send your answers.