

KATI ALHA

The Rise of Free-to-Play

How the revenue model
changed games and playing

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ACADEMIC DISSERTATION

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The name on the cover of this dissertation implies that this is solely my work. That, of course, is not the case. On a very concrete level, most of the studies I base my dissertation on are co-authored, and this is descriptive of the cooperative research I have had the pleasure of participating in during my career as a researcher. But the presence of colleagues, friends, and family in this work is much more pervasive than that. Without these people and support structures, I would not have been able to finish this undertaking, the results would have been significantly weaker, and the road significantly lonelier to walk.

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I have received advice and help in many forms from several people during this journey. I especially thank Jaakko Stenros, who at a critical point read the whole manuscript and gave invaluable feedback, suggestions, and encouragement, and whose comments made my work stronger. I am deeply grateful for getting experts of the field Christopher Paul and David Nieborg as my pre-examiners, who gave thoughtful, encouraging, and highly valued feedback. This has also improved my work and given me a new perspective for my future research. I further offer my gratitude to Kelly Boudreau, who agreed to act as my esteemed opponent.

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of this journey. In addition to supporting me and believing in the work that I do, she has constantly made me remember the importance of rest – and play.

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ABSTRACT

Free-to-play games have permanently transformed the game industry. Offering a game for free and gaining income through voluntary purchases during gameplay have proven to be the most successful way to gain revenue. Due to the model, more people than ever before play games, and the economic significance of games as business has multiplied. Simultaneously, the model has received a backlash for offering inferior, imbalanced game experiences that take advantage of players, manipulating them into playing and paying.

Despite the criticism and changes in game experiences, the research on free-to-play games is still heavily focused on economic aspects, with the goal to maximize revenue and find the best practices by which to implement the model. The voices of players are measured mostly through log data or quantitative surveys, while exploratory, qualitative research has been in the minority. The significance of free-to-play games and their connection to our game culture and society are still lacking critical inspection.

This dissertation takes up the challenge by studying free-to-play games from various perspectives through multiple methods, concentrating on qualitative approaches. The work shows the broad view of how and why free-to-play games have become so successful, how they have transformed games, and what problematic aspects are connected to them. The main claims of this dissertation are connected to: 1) the undervaluation of free-to-play games; 2) the unique challenges between money and gameplay experience; 3) the different framings of fairness and equality; 4) the need for transparency and legislation; and 5) the transformative power of free-to-play games on the consumption and creation of games.

The results show that while free-to-play games are played extensively, they are less valued than other games. This is especially true with mobile or casual free-to-play games and is descriptive of how we appraise and evaluate games. The lack of appreciation is connected to the nature of many free-to-play games, which are often never-ending and slow-paced, and offer challenges that differ from other games. The experiences that these games offer are different from the traditional, meritocratic values we have come to expect from games, and especially allowing advancement with money is in direct conflict with these values. The devaluation is shown in how

the games are discussed, how they are reviewed (or not reviewed at all) by game journalists, and how they are studied. The players who engage with these games can also be excluded from gaming communities and gaming identities. At the same time, the challenges of the revenue model have resulted in new, creative solutions that bring diversity into game experiences and offer flexible playing for wider audiences.

The ethical issues connected to free-to-play games do need to be taken seriously. Problems connected to a lack of transparency, problematic playing, a resemblance to gambling, marketing to under-aged players, and privacy issues raise valid concerns. While free-to-play companies need to be especially mindful in giving players enough information and to implement tools to prevent accidental purchases and problematic playing, the industry also needs regulation that comes from outside itself. Thus, to create fair and functional legislation, we need academic and industry expertise in the committees doing the legislative work.

Despite the challenges and undervaluation that free-to-play games encounter, it is an indisputable fact that their impact on the game industry and on game consumption is both formidable and irreversible. They therefore deserve our attention and a critical exploration as a legitimate part of game culture. If you do not know free-to-play games, you do not know games.

TIIVISTELMÄ

Ilmaispelit ovat mullistaneet pelialan. Pelin tarjoaminen ilmaiseksi ja tulojen kerääminen vapaaehtoisilla pelinsisäisillä maksuilla on osoittautunut tuottavimmaksi tavaksi ansaita peleillä. Mallin ansiosta pelejä pelataan nyt enemmän kuin koskaan, ja niiden taloudellinen merkitys on moninkertaistunut. Samaan aikaan ilmaispelit ovat saaneet osakseen kritiikkiä, jonka mukaan ne tarjoavat heikompia pelikokemuksia ja käyttävät hyväkseen pelaajia manipuloiden nämä pelaamaan ja maksamaan.

Kritiikistä ja pelikokemusten muutoksista huolimatta ilmaispelien tutkimus on edelleen pitkälti keskittynyt tarkastelemaan taloudellisia näkökulmia tavoitteena tuottojen maksimointi ja parhaiden toteutustapojen löytäminen. Pelaajien näkökulmia tarkastellaan pääasiassa lokitietojen ja määrällisten kyselyjen avulla, ja eksploraatiivinen, laadullinen tutkimus on ollut vähemmistössä. Ilmaispelien merkityksiä ja yhteyksiä pelikulttuuriimme ja yhteiskuntaamme ei ole juuri tutkittu.

Tämä väitöskirja tarttuu haasteeseen tutkimalla ilmaispelejä useista näkökulmista ja useilla, laadullisiin lähestymistapoihin keskittyvillä menetelmillä. Työ luo laajaa ymmärrystä siitä, miten ja miksi ilmaispelit nousivat suosioon, miten ne ovat muuttaneet pelejä ja mitä ongelmallisia piirteitä niihin liittyy. Väitöksen päähuomiot liittyvät viiteen kohtaan: 1) ilmaispelien aliarvostukseen, 2) rahan ja pelikokemuksen välisiin ainutlaatuisiin haasteisiin, 3) reiluuden erilaisiin kehyksiin, 4) läpinäkyvyyden ja lainsäädännön tarpeeseen ja 5) ilmaispelien mullistavaan voimaan muuttaa pelien kulutusta ja tuotantoa.

Tulokset osoittavat, että suuresta suosiostaan huolimatta ilmaispelejä arvostetaan muita pelejä vähemmän. Tämä koskee erityisesti mobiili- ja kasuaalipelejä ja kuvaa sitä, miten arvioimme ja arvotamme pelejä. Arvostuksen puute liittyy osaltaan ilmaispelien luonteeseen. Ne ovat usein päättymättömiä ja hidastempoisia ja tarjoavat muista peleistä poikkeavia haasteita. Niiden tarjoamat kokemukset eroavat perinteisistä, meritokraattisista arvoista, jotka tyypillisesti liitetään peleihin, ja erityisesti rahaa maksamalla eteneminen on ristiriidassa näiden arvojen kanssa. Arvostuksen puute taas näkyy esimerkiksi siinä, miten peleistä keskustellaan, miten niitä arvioidaan (tai ei arvioida lainkaan) pelimediassa ja miten niitä tutkitaan. Ilmaispelien pelaajia voidaan myös sulkea pelaajayhteisöistä tai pelaajaidentiteeteistä. Samalla ansaintamallin haasteet ovat tuoneet esiin uusia, luovia suunnitteluratkaisuja,

jotka lisäävät pelikokemusten monimuotoisuutta ja tarjoavat joustavampaa pelaamista laajemmille yleisöille.

Ilmaiseleihin liittyvät eettiset ongelmat tulee ottaa vakavasti. Läpinäkyvyyden puutteeseen, ongelmapelaamiseen, samankaltaisuuteen uhkapelien kanssa, alaikäisille markkinointiin ja yksityisyyteen liittyvät kysymykset nostavat esiin tärkeitä huolia. Samalla kun ilmaispeliyhtiöiden tulee antaa pelaajille tarpeeksi tietoa ja rakentaa työkaluja vahinko-ostosten ja ongelmapelaamisen estämiseksi, peliala tarvitsee myös ulkoapäin tulevaa sääätelyä. Jotta lainsäädäntö olisi reilu ja toimiva, tarvitsemme tutkijoiden ja teollisuuden asiantuntemusta lakiasäätävissä elimissä.

Haasteista ja aliarvostuksesta huolimatta ilmaispelien vaikutus peliteollisuuteen ja pelien kulutukseen on sekä merkittävä että peruuttamaton. Siten ne ansaitsevat huomiomme ja kriittisen tarkastelun oikeutettuna osana pelikulttuuriamme. Jos ei tunne ilmaislejää, ei tunne pelejää.

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ORIGINAL PUBLICATIONS

- Article I Alha, K., Koskinen, E., Paavilainen, J., Hamari, J., & Kinnunen, J. (2014). Free-to-play games: Professionals' perspectives. *DiGRA Nordic '14: Proceedings of the 2014 International DiGRA Nordic Conference*.
- Article II Paavilainen, J., Alha, K., & Korhonen, H. (2015). Domain-specific playability problems in social network games. *Int. J. Arts and Technology*, 8(4), 282–306.
- Article III Alha, K., Koskinen, E., Paavilainen, J., & Hamari, J. (2016). Critical acclaim and commercial success in mobile free-to-play games. *DIGRA/FDG '16 - Proceedings of the First International Joint Conference of DiGRA and FDG*.
- Article IV 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.
- Article V Alha, K., Kinnunen, J., Koskinen, E., & Paavilainen, J. (2018). Free-to-play games: Paying players' perspectives. *Mindtrek '18: Proceedings of the 22nd International Academic Mindtrek Conference*, 49–58.
- Article VI Alha, K., Koskinen, E., Paavilainen, J., & Hamari, J. (2019). Why do people play location-based augmented reality games: A study on Pokémon GO. *Computers in Human Behavior*, 93, 114–122.
- Article VII Alha, K. (2019). The imbalanced state of free-to-play game research: A literature review. *DiGRA '19 - Proceedings of the 2019 DiGRA International Conference: Game, Play and the Emerging Ludo-Mix*.

RESEARCH CONTRIBUTIONS

- Article I Four authors, including myself, participated in the data collection. I had the main responsibility of the analysis process and analyzed the data with one co-author. I wrote the results with one co-author. All of the authors participated in writing the background and the discussion. I acted as the corresponding author of the article.
- Article II The first author collected the original data of the article. All three authors, including myself, equally participated in functioning as meta-evaluators and analyzed the data. The first author had the main responsibility of reporting and discussing the findings, while the other authors participated in a supporting role.
- Article III I was responsible for planning and executing the study. I and one of the co-authors selected and analyzed the games. I collected the quantitative data, and one of the co-authors analyzed it. All authors participated in writing the discussion. I acted as the corresponding author of the article.
- Article IV I participated in the design of the survey instrument, the collection of the data, but not in the analysis process. I had a leading role in writing the discussion and finalizing the article.
- Article V I was responsible for planning and executing the study. All authors participated in the data collection. I analyzed the data and wrote the results and the majority of the discussion. I acted as the corresponding author of the article.
- Article VI Three authors, including myself, participated in the data collection and qualitative analysis. I was responsible for the qualitative analysis process, and one co-author was responsible for the quantitative analysis. All authors participated in writing the discussion. I acted as the corresponding author of the article.
- Article VII I was solely responsible for planning and executing the study, writing the article, and acting as the corresponding author.

1 INTRODUCTION

In 2010, I, along with many of my colleagues from the Tampere University Game Research Lab, started playing *Cow Clicker* (Bogost, 2010). *Cow Clicker* was a game on Facebook, created by Ian Bogost as a parody of the free-to-play games crowding the social networks at the time. In the game, the player had a cow, and they could click it. The cow mooed, and the player's number of clicks went up by one. After some time, they could click the cow again. In addition to cow-clicking, players could add neighbors to their pasture, share their clicks on their wall to earn more clicks, or buy in-game currency (Mooney) to get premium cows or skip waiting for the next click. While the game was created as critique towards the manipulative design of Facebook games, it was surprisingly successful. And so were we. At the peak of our success, the Game Research Lab dominated the high score board, holding the top five positions. I myself managed to climb to first place, earning a "Golden Udder", a grand prize given to the current top player. After some time, we grew tired of clicking our cows, could not keep up with more competitive players, and lost our lead. Still, for a while, we had fun clicking cows, and I remember those times fondly.

Cow Clicker was made as a parody, but most free-to-play games on social networks were out there to make a profit. When the CEO of the leading Facebook game publisher, Zynga, was brutally honest about their business model and the moneymaking aspect, the company faced stark opposition. At the same time, their games were a tremendous success, played by hundreds of millions of people. There is a special and complicated relationship between games as entertainment and games as business. For many, games are a field of passion and fandom, and first and foremost artistic creations that offer us immersive experiences. These dedicated parties tend to dominate the discussions on the topic of games, and actively negotiate what should be the correct values for them. These values might at times contradict with the direction of the game industry or the preferences of the larger game-playing audiences, and when this happens, the development in question is protested. This has been the case with the free-to-play revenue model.

The history of digital games includes various revenue models, from the pay-per-play model of arcades to the free distribution and voluntary payments of shareware

games. As video game consoles grew in popularity, a one-time purchase fee paid in advance became the dominant and accepted way to ask for money for games. The free-to-play model discarded this model and instead offered games for free, gaining their revenue from voluntary in-app purchases and advertisements. The model was quickly seen as a negative development in media, player communities, and even among game developers, and several controversial aspects arose. Bringing money into game design and intertwining it with gameplay was discussed as a corrupting force, destroying something inherently valuable in games. These games were seen as inferior, and it was claimed that designers no longer strived for the best possible game experience, but more for the highest possible income. One of the biggest affronts to the ideals of gaming was the possibility to pay to advance faster, and so gain a competitive advantage over others. This clashed with the meritocratic values in games idolizing effort and skill above all else (Paul, 2019).

While the free-to-play model brought money to the focus of discussions, commercial games have always been developed and published to make a living and to earn a profit for stakeholders. Games have continually increased their significance as a business, and this has been celebrated and often seen as a sign of the importance of the field. This dissertation started at a time where free-to-play games had already risen to become a considerable economic success, but during the dissertation process, they have further increased their dominance. For instance, the mobile game market in North America is dominated by free-to-play and has increased from \$4.6B in 2014 to \$11.8B in 2019 (EEDAR, 2014; NPD, 2020). In 2019, free-to-play games already accounted for 80% of all digital games revenue, being an 87-billion-dollar industry, while free-to-play mobile games had a clear majority of the market size, accounting for 64 billion dollars (SuperData, 2020).

The growth of the free-to-play model has been partly possible due to changes in the consumption of games. In the current society, nearly everyone plays at least something (Kinnunen et al., 2018), while the revenue models have shifted from retail products to a service relationship between the publisher and the customer (Stenros & Sotamaa, 2009). Mobile and casual games have become the biggest categories of games, and the availability of smartphones means that more people than ever have their own gaming platforms. The casual design (see Kultima, 2009) of mobile games makes them appealing to wider audiences, and the lack of purchase price of free-to-play games lowers the threshold for people to try the games. Consequently, the audiences have become increasingly larger and more diverse, and the ownership of playing games has shifted from smaller groups of hobbyists to a larger crowd of players. While a smaller group of gamers still dominate the discussions, the

perspectives on what constitutes a good playing experience form a far greater whole than the surface picture allows us to understand. This phenomenon became especially visible in 2016 when *Pokémon Go* (Niantic, 2016) brought crowds of players from children to elders onto the streets to hunt for Pokémon creatures.

The questions about free-to-play are, however, not just about different audiences and what constitutes a good game experience, but also involve questions of fairness and ethics. From the developer's perspective, breaking into the market is increasingly difficult as a small number of already highly profitable game companies dominate the top-grossing charts. Designing free-to-play games also offers its own challenges, as integrating the revenue model as a part of the gameplay is not a simple task and requires new kinds of skills and roles in the game companies.

From the player's perspective, in addition to having a reputation of offering poor gameplay experiences, free-to-play games are connected to player exploitation (Alha et al., 2014). Ethical problems are especially present in games that make the majority of their revenue from a small minority of high-spending players. If paying is connected to problematic gaming practices, then the potential economic impact for the individual can be severe. In this sense free-to-play games border on gambling, and the discussions on problem gaming are ongoing (Kinnunen, 2016). These issues have caused free-to-play games to be regulated from outside the industry, and new legislation is constantly being negotiated.

While the free-to-play game industry is being challenged to develop better, fairer, and ethically sound games while maintaining economic goals, I challenge gaming audiences (including media and researchers) to embrace free-to-play games and their diversifying nature in the gaming ecosystem. The free-to-play revenue model has transformed many aspects of playing and producing games, and research plays a key role in the pursuit of understanding the nature and consequences of these changes. In this dissertation, I explore *how the free-to-play revenue model has affected games and playing*. I approach the topic from three perspectives: influence on games, problematic aspects, and motivations to engage in these games. My more specific research questions are as follows:

RQ1: How has the free-to-play model *affected game content*?

RQ2: What *problematic aspects* are connected to the free-to-play model?

RQ3: *Why* do people a) *play* free-to-play games and b) *pay* in them?

Answering these questions will provide an important understanding of the complex nature of free-to-play games. These results will benefit the academic community as

well as game developers, as understanding the problematic characteristics involved will help to create better game experiences. The results can also be utilized as tools in game and media education. Considering the ethicality of the free-to-play model is a crucial challenge that needs to be overcome in order for the model to continue to prosper. On the other hand, free-to-play games deserve critical and unbiased attention from the research community. While free-to-play games have become an imperative part of the game industry and game playing, they are often seen as inferior or are even excluded from game cultures. This not only dismisses the game creators and their work, but also the players who willingly engage in the games. As these audiences often include “non-gamers”, downplaying the importance of free-to-play games also downplays the experiences of these audiences and contributes to gaming as an elitist activity reserved for “real” games and gamers (Consalvo & Paul, 2019).

This dissertation comprises of seven research articles that each have their own approach to the topic. These multiple approaches and the use of several datasets give a better view into the complicated, multifaceted topic of the dissertation. Table 1 lists the articles, their research questions or line of enquiry, used data and methods, as well as which of the research questions of this dissertation they contribute to.

Table 1. Included articles, their research question(s), data and methods, and the connection to the dissertation's research questions

Article	Article research question(s) / line of enquiry	Data and methods	Dissertation research question(s)
Article I	Game industry professionals' attitudes and perspectives towards the free-to-play model	Interview data (N=14), thematic qualitative text analysis	RQ1, RQ2
Article II	Domain-specific playability problems in social network games	Heuristic evaluation of Facebook games	RQ2
Article III	The relation between critical acclaim and commercial success in mobile free-to-play games	Dataset of top-grossing iOS games with a Metascore (N=236), regression analysis Games with high Metascore (N=5), games with a top-grossing rank (N=5), game analysis	RQ1, RQ2
Article IV	What are the reasons for purchasing in-game content?	Online survey (N=519), factor analysis, regression analysis	RQ3b
Article V	Paying player perspectives and experiences regarding the free-to-play model	Interview data (N=11), thematic analysis	RQ1, RQ2, RQ3ab
Article VI	Why players have started, continued, or quit playing PGO?	Qualitative survey (N=2612), thematic analysis	RQ3a
Article VII	How has research addressed the free-to-play game phenomena?	Systematic literature review	-

To understand the free-to-play model, its origins, characteristics, and executions, the relevant background of the model is described in Chapter 2. I will go through the different revenue models used in games, discuss in-app purchase types, the importance of analytics and metrics used in the development, and the history of free-to-play games. Finally, I will discuss some points of criticism raised towards the model.

Chapter 3 consists of a literature review on the research of free-to-play games. The chapter is based on Article VII, which I have extended and modified for the purpose of this dissertation. The aim of the literature review is to show how free-to-play games have been studied in academia, which areas still require further research, as well as showing where this dissertation fits within the research. The literature review shows how free-to-play games are often studied from economic perspectives, and the critical approach discussing game experiences, meanings, and ethical considerations is lacking.

I will discuss the methodological choices and methods used in articles I-VI in Chapter 4. The positioning of the dissertation is within game studies, drawing influence from social studies, design research, and computer-human interaction, and I will discuss how this background influences my work. The multidisciplinary methods used will be presented separately for each of the articles, while the methodological choices will be discussed on a more general level.

In Chapter 5, I will go through the main results for each of the research questions of the dissertation. Each of the articles contributes to at least one research question, and each research question is answered through at least three of the included articles. I will discuss the effects on game content on the levels of game type and game mechanics. I will divide problematic aspects into attitudes, game experiences, fairness, and ethics. Under motivation to play and pay, I will discuss the reasons to start or continue to play a game, the characteristics of paying inside games, and go through concrete purchase motivations.

I will discuss the various meanings and impacts of the results in connection to previous literature more broadly in Chapter 6. I will make five main points: 1) Free-to-play games are at the core of the game industry, but on the periphery of game culture. 2) Free-to-play games have unique challenges in finding balances between revenue and gameplay experience. 3) Free-to-play games frame fairness and equality differently than other games. 4) Free-to-play companies need transparency, responsibility, and legislation. 5) The free-to-play revenue model has permanently transformed games.

Finally, I will summarize the main results and contributions of the dissertation in Chapter 7. I will reflect on my research process and consider the limitations of my research, following with suggestions of how free-to-play games should be approached and studied in the future.

In this dissertation, I mainly refer to digital games when I discuss games. Furthermore, as free-to-play games constantly change throughout their life cycle, there is no one instance of them. Therefore, when I refer to specific games, they might differ in description from their current form, and some of the games may even have been discontinued and thus inaccessible.

2 FREE-TO-PLAY MODEL

The purpose of this chapter is to better understand the free-to-play revenue model and its characteristics. I start by positioning the model among other revenue models in the game industry, after which I discuss two major features connected to the free-to-play model: in-app purchases and analytics. The chapter continues with a historical account showing the birth and rise of the model in multiple steps, and ends with a collection of critique that has been directed towards the model. After this chapter, the reader should understand how free-to-play games differ from other games, why they rose to popularity, and some of the problematic aspects that are connected to them.

2.1 Revenue models in games

In this subchapter, I will position the free-to-play model in game industry by discussing various business and revenue models. There are different ways these concepts are interpreted, and in some cases, terms such as *business model* and *revenue model* are confused with each other (DaSilva & Trkman, 2014). A business model can be defined as a holistic perspective of how the company in question does business and creates and captures value (Johnson et al., 2008; Shafer et al., 2005), while a revenue model takes into account how that value is turned into revenue (DaSilva & Trkman, 2014). In the scope of the game industry, the business models of game publishing can be roughly divided into two categories: *freemium*, which includes games that can be played (at least partly) for free, and *premium*, which includes games that require payment. It is worth noting that these terms can be vague and ambivalent, and used differently in various contexts (Osathanunkul, 2015). For instance, in addition to business models, freemium and premium can be considered as choices inside a single service, where the user can choose between a free and a paid version. Furthermore, the terms freemium and free-to-play are often used interchangeably. In the context of this dissertation, I define freemium as the wider business model, under which free-to-play locates as one of the revenue models. Both freemium and premium include several revenue models. As an additional

consideration, not all game creation is commercial, and games can be published completely free and even open source, so allowing others to further modify the shared games. Next, I will go through some of the typical models for distributing and selling games: *one-time payment*, *subscription*, *pay-per-play*, *demo* and *shareware*, *trial*, *episodic*, *platform subscription*, *free*, and *free-to-play* models.

One-time payment became the dominant way to pay for games after video game consoles became more popular in the 1980s, and games were sold in various physical media formats. In its simplest form, games have a one-time purchase fee, after which the player can play the game freely for as long as they want and with no additional cost. Until recently, games with a one-time-payment were mainly a *retail* business, bought from stores as physical copies, after which the user owned the copy and could for instance sell it forward (Toivonen & Sotamaa, 2010). Currently, it is more common to buy games as *digital downloads*, and simultaneously the issue of ownership has changed. In this model, players no longer buy the game, but instead buy a service and an access to the game (Stenros & Sotamaa, 2009). In addition to a one-time purchase fee, more money can be asked for additional content such as *add-ons* and *downloadable content* (DLC). These can offer different amounts of new playable content, but are not necessary to enjoy a full experience with the original game. Some games can be sold in advance, such as can be seen in the *early access* or *crowdfunding* models (see Tyni, 2020). In these cases, the player pays the purchase fee before the game is finished, often with no guarantees how exactly the game will turn out. In the early access model, the player gains access and can play the game already in its unfinished form, while in the crowdfunding model, the player must typically wait for the production to be completed before gaining access.

Subscription is based on periodic, typically monthly payments that allow the player to access the game's content during that period. The model's roots are in the early multi-user dungeons (MUD), online worlds where players could cooperate, battle, and communicate with each other (Wolf, 2008, pp. 173–174). The first MUDs in the 1970s were free, but in the 1980s, commercial MUDs with subscription fees were brought to market (Bartle, 2016). In 1990s, the model became the norm in massively multiplayer online (MMO) games, virtual game worlds that allowed thousands, even millions of players to inhabit the servers (Wolf, 2008, pp. 175–176). MMOs have remained popular to date and have incorporated different revenue models. Some subscription model games only require a periodic payment, while others also have a one-time purchase fee. Some games within the subscription model also include in-app purchases, approaching the free-to-play model. In some cases, MMO games have either been launched or turned into free-to-play games, including in-app

purchases, removing the periodic payments or making them voluntary, and adding restrictions for non-paying players.

The *pay-per-play* model includes games that require money for each playtime, such as until the player dies in the game or runs out of time. Typical games in this model are arcade games that require coins to start and continue playing the game, and subsequently the model is sometimes called the *coin-operated* model (Osathanunkul, 2015). The pay-per-play model reaches the beginnings of the digital game industry in the arcade halls and goes further back in non-digital games such as pinball machines and electromechanical games (Wolf, 2008, p. 18). To reach maximum revenue, the games were designed to be challenging, so the player would need to play several times to advance further and improve their results (Schweizer, 2016). Additional revenue is collected during play: for example, when the player runs out of lives, they can pay again to continue playing from the same point (Lambie, 2018). The design of pay-per-play games is in some ways similar to free-to-play games, as both need to include the revenue model inside their gameplay, and try to give an incentive for the player to continue spending money after making the decision to play. Arcade games were most popular in the 1970s and 1980s, but they still survive to the present day and remain especially popular in Japan (Sambe, 2009). Other examples of pay-per-play games are SMS games, where each player action is sent as a text message with a pre-defined cost (Kuorikoski, 2015, pp. 76–77), and many gambling games where each round requires a bet to be placed.

A *demo* or demonstration can be freely accessed and played, but only includes a portion of the game. A demo shows the player what the game feels like with the purpose of helping to guide the purchase decision. Demos can vary from only including video material and no playable content to having entire game worlds to play, as seen in the many *shareware* games that can also be freely distributed. While hobbyists especially spread their games as shareware through the BBS systems in the pre-WWW era, the method became more commercialized in the 1990s (Wolf, 2012, p. 568). It is most well known in the game industry to be used by Apogee (later known as 3D Realms), for instance with *Commander Keen* (id Software, 1990) and *Wolfenstein 3D* (id Software, 1992). As these games reached wider audiences, enough players ended up purchasing the whole game to make the games profitable, even though it was a minority share of the overall player base. In this sense, demos resemble today's free-to-play model, where only a minority of players pay for the game. Due to the wide availability of many other channels to find information about games before making purchase decisions, the relevance of demos has decreased.

In contrast to demos, a *trial* of a game can offer the full experience of a game, but only for a limited time. The time limit can be defined inside the game, such as one hour of playtime, or as a period of time outside the game, such as having the game freely playable for a specific weekend. In some cases, a trial is limited by the number of times a game can be started. After the trial has ended, the player has a choice to buy the full game and continue their progress, or to discontinue playing. Similar to the free-to-play model, the beginning of the trial game should be engaging to persuade players to continue playing – and paying.

The *episodic* model is relatively new in the game industry, popularized by Telltale Games. In this model, the game is created in a series of episodes, each purchasable on their own. The player can buy the first episode and decide whether or not to buy the next, or they can sometimes buy the whole season beforehand. This model gives the developer the advantage to execute the game in smaller sections and receive revenue during the development process of the entire series. The games in the episodic model are typically heavily story-based, borrowing conventions from television series (Wirth, 2013).

The *platform subscription* model is a content-provider model, where the platform allows access to certain games with a monthly or annual payment. There are different types of services, where the player receives games periodically while paying the service fee (for instance PlayStation Plus by Sony and Humble Monthly by Humble Bundle), or where the player gets access to a library of games while paying (for instance PlayStation Live by Sony and Xbox Game Pass by Microsoft). In some services, the player can only play the received games while paying the service fee (PlayStation Plus), while in others the games are theirs to keep even after they are no longer paying (Humble Monthly). Some platforms, such as Epic Games, have started to offer free games even without a subscription payment, so as to gain a player base in a competitive market situation that is dominated by Steam.

A *free* game has no starting or periodic fees or any paid content at any point of playing the game, and therefore it is not actually a revenue or business model. However, in some cases the makers can ask for donations. The nature of free games varies greatly, but typically, free games are smaller games such as hobbyist projects, game jam games, or artistic or political expressions. Sometimes a commercial game may be released as a free version after it has been on the market for some time and can no longer make substantial revenue.

Free-to-play games are free to access and play but include voluntary payments for various in-game advantages (Alha et al. 2014). These features – the game being able to be accessed and played free of charge, the game including paid content, and paying

for the content being voluntary – are considered as defining in this dissertation. The model is sometimes called a *microtransaction* model (Osathanunkul, 2015) referring to the several smaller in-app purchases that are offered in the games. The lack of purchase price lowers the threshold to start playing and helps the game to reach wider audiences. It also allows flexibility for consumers, as players can decide if and how much they are willing to pay for the game. There are many possibilities for creating purchasable content. For instance, they can offer ways to customize the visuals of the game, make the game more convenient or faster to play, make the player more powerful, or allow players to send gifts to other players (Chapter 2.2 discusses the different types of in-app purchases in more detail). While games under the free-to-play revenue model often include advertisements as a part of their monetization, games that include advertisements but no in-app purchases are not considered as free-to-play in the context of this dissertation.

Table 2. Revenue models and their typical purchase points

	Starting fee	Periodic fee	Pay to continue	Pay for playable content	In-app purchases
Free	No	No	No	No	No
Demo/Shareware	No	No	No	Yes	No
Trial	No	No	Yes	No	No
Free-to-play	No	Possible	Possible	Possible	Yes
Platform subscription	No	Yes	No	No	No
Subscription	Possible	Yes	No	Possible	Possible
One-time payment	Yes	No	No	Possible	Possible
Episodic	Yes	No	No	Yes	No
Pay-per-play	Yes	No	Yes	No	No

The typical ways to offer paid content in the described models are summed up in Table 2. The revenue models can include purchases that are not typically included in the game, but depending on the implementation, this can cause opposition from players. For instance, it is already accepted and sometimes even expected that games with a one-time payment will include add-ons or DLC. More recently, these games have been increasingly adding in-app purchases similar to those seen in free-to-play games, the practice of which is not yet approved of by players. The game industry is constantly looking for the best ways to gain revenues on top of the one-time payment, and some (such as EA’s Ultimate Team modes in games like the *FIFA* series (EA, 1993–)) have already been successful, if not unproblematic, in

implementing in-app purchases. On the other hand, many free-to-play games have successfully included voluntary periodic fees familiar from the subscription model, offering premium status and benefits. These are marked as “possible” in Table 2 in cases where the use of the paid content in the model is considered frequent enough.

Games can receive income by means other than directly from players, most commonly from advertisements. This approach can be divided into two main categories: *advergaming* and *in-game advertising*. Advergaming are either free or paid games, which are created to advertise a brand or a company. Examples of such games are *Pepsiman* (KID, 1999) and *Painterboy* (Chart Top Design, 1986). In-game advertising, on the other hand, places advertisements inside the game, but not necessarily as a part of the game world. They can include sponsored product placement or cross promotion from other games and services. Cross promotion can be in the form of clickable banners or videos that the player is either forced to watch or may choose to watch to receive rewards. In free-to-play games, these typically advertise other free-to-play games, functioning as an acquisition method for those games.

2.2 In-app purchases

The most fundamental characteristics of free-to-play monetization are the lack of a starting fee and the inclusion of voluntary purchases during gameplay. There are many ways to implement what the paid content is, how it influences the game, and how aggressively it is tied to playing and advancing.

In the most simple terms, paid content can be divided into two categories: those that influence gameplay or are *functional*, and those that affect the appearance of the game or are *decorative* (Oh & Ryu, 2007). Vili Lehdonvirta (2009) further divides these two main categories into sub-categories. According to him, functional attributes can be divided into *performance* which gives a numerical advantage, and *functionality* which gives new abilities and options. He divides hedonic attributes into *visual appearance and sounds*, *background fiction*, *provenance*, *customizability*, *cultural references*, and *branding*. In addition, Lehdonvirta adds a third main category of *social*, under which he categorizes *rarity*, which can be used to distinguish oneself from the crowd.

In another attempt to categorize paid content, Will Luton (2013, pp. 76–81) divides in-app purchases into four categories, giving special focus to functional item types. These are *content* which can include for instance more levels or new abilities; *convenience*, which allows players for instance to skip boring content such as grinding;

competitive advantage, which gives the player an edge over other players; and *customization*, which allows personalization and showing creative expression.

Lehdonvirta's (2009) functional attributes and Luton's (2013) convenience and competitive item categories can be further divided to capture some essential differences. Functional content is criticized for creating fairness issues between paying and non-paying players. Especially in competitive games, content that gives players power over others is frowned upon, and games that includes these items are called *pay-to-win*. However, content that makes a player advance faster gives an advantage by leveling up and becoming more powerful in an indirect way. Skipping waiting and grinding can be seen as a more accepted way to use money compared to direct power content, such as weapons or boosters. A third, most accepted form of functional content includes content designed for convenience, which makes playing more pleasant or less tedious. This can mean a larger inventory that helps to decrease item management, and typically gives the least amount of competitive advantage. Furthermore, I would argue that while Lehdonvirta's *social* category is important to include, especially in recent games, social content has included shared content and access to social features in addition to the rarity factor mention in the original study. Therefore, following Luton (2013) and Lehdonvirta (2009) and these considerations, I divide paid content into five categories: *cosmetic*, *convenience*, *advancement*, *power*, and *social* content.

In-app purchases can be further divided on their effect times. Paid content can be consumed on use and give a timed effect, or it can have a lasting effect and provide permanent content (Oh & Ryu, 2007). In addition to consumable and permanent content, some games have voluntary periodic fees, which give benefits only while the player pays the fee. Therefore, content can be further divided roughly into three categories depending on the effect time involved: namely *consumable*, *subscription*, and *permanent* content. Table 3 gives examples of different in-app purchases from each combination of these categorizations.

Table 3. Examples of different types of paid content in free-to-play games

	Consumable	Subscription	Permanent
Cosmetic	Limited time costume	Premium portrait	Permanent costume
Convenience	Easier harvesting	Premium inventory	Inventory upgrade
Advancement	Energy refill	Premium XP	Level unlock
Power	Booster	Premium ammo	Weapon upgrade
Social	Shared booster	Premium chat	Guild upgrade

In cosmetic items, permanent purchases are common. Players can buy, for example, different types of costumes for their characters, new avatars, furnish their homes, decorate their farms, and get new commentator voices. Some games offer non-permanent cosmetic items, such as the limited time costumes in *Maple Story 2* (NSquare, 2015) or premium portraits for subscribers in *Lords of the Rings Online* (Turbine, 2007).

Consumable convenience items make the game easier for a limited period of time. For instance, in *FarmVille* (Zynga, 2009), the player could buy gasoline that could be used to “drive” a tractor. With the tractor, the player had to click fewer times to harvest their crops, as it would harvest a larger area with one click. Permanent convenience items are, for instance, inventory upgrades which allow players to fit more items into their bags without constantly removing items and maintaining the inventory. Inventory upgrades can also be subscription-based, where the player receives the advantage as long as they keep paying the subscription fee.

Especially in social network games and mobile free-to-play games, having consumable advancement purchases is a popular way to ask for money. These games often include *offline progress mechanics* (Paavilainen et al., 2015), which mean the player needs to wait for a period of real time to pass before the task advances. By paying money or in-game currency, the player can immediately finish a time-based task and so progress faster. In energy-based games, the player can refill their energy bar, making more actions possible without waiting. Similarly, with subscription, the player might receive more experience points from battles or tasks than without it, making leveling up faster. Advancement purchases as permanent effects are rarer but still exist. For instance, in *Angry Birds Rio* (Rovio Entertainment, 2011), the player can buy an item that allows them to skip levels. After the purchase, the item can be used as many times as the player wishes.

Power upgrades can be bought in many forms. A typical consumable item is a booster that makes the player more powerful or skillful for a short period of time. Subscriptions can also offer power upgrades, such as premium ammunition in *World of Tanks* (Wargaming, 2010). Permanent upgrades can also include items such as new or upgraded weapons.

In the social category, players can send each other gifts that can be bought with real money or in-game currency. The gifts themselves are typically consumables, such as boosters in *Candy Crush Saga* (King, 2012). Players can also use shared boosters, such as the lures featured in *Pokémon Go*. The effects of these boosters are available for all nearby players, even though only one of the players uses them. In the subscription category, players can gain access to premium chat channels or access

to the world chat (such as in *Maple Story 2*), allowing more socializing and cooperation. Permanent upgrades can include upgrading or modifying the guild, such as in *Game of War: Fire Age* (Machine Zone, 2013).

These categories are not clearly cut, and one in-app purchase can belong to several categories. For instance, a special item can both be a power item by having better qualities than the basic item, and also have unique visuals, making it cosmetic content as well. Convenience content is often (but not always) simultaneously content designed for advancement, as it can help the player advance faster by skipping tedious tasks such as grinding. Similarly, shared or gifted social items can simultaneously belong to other categories.

In the majority of free-to-play games, the player rarely buys items directly with real money. Instead, the player can buy in-game currency, which can then be used to buy the actual items. This currency is called *hard currency* and is highly valued. Depending on the game, the player may get some hard currency while playing the game as rewards. Many free-to-play games also feature one or more forms of *soft currency*. This currency can typically be accumulated more easily while playing, and can be used to buy some, but not all of the items available within the game. Usually, real money can be transformed to hard currency or soft currency, and hard currency can be transformed into soft currency, but not vice versa. This is called the *double currency* or *multi-currency* model (Alha et al., 2014). By using the game's own currency, the game developers have a better control of the game's economy and can for instance prevent inflation and adjust their prices more easily. Using in-game currency instead of directly using real money can also be a way to blur the real cost of the purchases. Furthermore, by giving the player some hard currency, the player can learn how to buy in-game content without first using real money, so lowering the threshold for them to do so later.

Some games sell items in randomized packages where the player only knows the content after having paid and opened the package. These are called *loot boxes*. Each time a player opens a loot box, they have a small possibility of receiving rare and valuable items, and items they are still missing from their collection. The *gacha* game mechanic is similar to loot boxes. In *gacha*, a player cannot buy items directly, but rather by taking their chances in a mini game that resembles a capsule-toy vending machine (*gacha* in Japanese). To get the rare items, the player typically has to try many times and consequently spend money. Sometimes, special items can only be collected within a certain timeframe, building pressure on the player to spend money to get them before the time runs out. Loot boxes and *gacha* mechanics have been the target

of criticism and have even been banned in some countries, as discussed in more detail in the last part of this chapter.

In addition to in-app purchases, free-to-play games use *advertising* as a means of monetization, as mentioned in the previous subchapter. Advertisements can be shown at certain intervals and are typically unskippable for a certain amount of time. Sometimes the player can pay money to get rid of these advertisements. In another approach, the player can choose to watch an advertisement in order to continue playing the game, to improve their rewards, or to receive some in-game currency, for example.

2.3 Analytics and metrics

Free-to-play game development utilizes data collected from the users while they are playing the game. Free-to-play games are not an exception in this regard, as collecting and using data is nowadays a common practice in most commercial games. Game companies in general have access to an increasing number of data from the users, but in free-to-play games, where the revenue is collected during gameplay, putting this data into use is especially important.

Analytics are an umbrella term for the process and methods of discovering and communicating patterns in data (Drachen et al., 2013). *Game analytics* are analytics that are applied in the game development to support decision-making. They are used on several levels of decision-making and problem-solving, and on all levels of the game company including design, art, programming, marketing, and so on (Seif El-Nasr et al., 2013, p. 5).

Log data (or *telemetry data*) is data that the developer can gain remotely (Seif El-Nasr et al., 2013, pp. 16–17). Log data records player actions and can be obtained directly from the users while they are playing the game without any extra effort from players. Game companies and services can track and record everything the player does in the game, which can result in large bulks of data. Therefore, the process of making use of that data is important, and finding out what to track, how to analyze the data, and what decisions to make based on the results requires new kinds of expertise in game companies. However, making game design decisions based on metrics has been criticized as aiming to maximize revenue instead of focusing on improving the game experience.

The raw log data can be transformed into *game metrics*, offering various measures that can be interpreted more easily. Typically, the metrics are based on log data, but

a metric can be any quantitative measure of the game and can also be based on other data types (Drachen et al., 2013). Game metrics can be divided to performance metrics, process metrics, and user metrics (Mellon, 2009). Performance metrics are related to the technical aspects of the game such as frame rates and stability, while process metrics relate to the development process, for instance measuring the deliverance time of new content. User metrics are used to calculate for instance the average revenue per user, analyzing customer support performance, or to focus on player behavior in the game. (Drachen et al., 2013.) They can measure any aspect of the game, such as how many people play the game daily (DAU), how much on average a daily player spends on the game (ARPDau), how much money a player generates throughout their playing career (LTV), or how many who see an advertisement click it (CTR) (Fields, 2013).

There are three especially important aspects for the success of free-to-play games: the *acquisition* of new players, the *retention* of those players, and the *monetization* of the players. Together, they form the *ARM model*. The ARM model can be described as a funnel, where a lot of players need to start the game so that enough of them continue playing, and consequently, enough of the continuing players will be converted into paying customers (Fields & Cotton, 2012).

As the number of free-to-play games is rapidly increasing, finding a large enough player-base for a new game is challenging. The *acquisition* of new customers is vital for the game's success, and there are various methods by which it may be accomplished, such as advertising, virality, featuring in the marketplace, and being positively reviewed by users or media. Some of the methods such as advertising cost money for the company, and *return on investment* (ROI) or *return on ad spend* (ROAS) describe the relationship of received and spent resources.

Retention means how large a percentage of players return to the game in a certain period (Luton, 2013, pp. 20–21). Retention is often one of the best predictors of success, especially in the beginning of the free-to-play game's life cycle. A weak retention rate might be a signal for the developers to modify the game or even kill the game early. As free-to-play games are free, the threshold to move from one game to another is low, and therefore the very beginning of the game is especially important. The first minutes of the game can be the decisive moment whether a player will stay or go, and this is called the *onboarding process* (Seufert, 2014, pp. 98–99). Players leaving the game at different points of the game is known as *churn* (Luton, 2013, pp. 20–21), and there are several metrics that describe retention and churn.

Gaining revenue from players in free-to-play games is called *monetization* (Luton, 2013, p. 72). As described in Chapter 2.2., free-to-play game companies can generate

revenue from different types of in-app purchases and advertising. But as players can play for free, the game has to offer a motivation to turn free players into paying players. This process is called *conversion* (Luton, 2013, p. 9).

When transforming and handling large amounts of user data, privacy, security, and ethical questions are important issues to consider. Players need to give their permission for the data storing and handling before starting to play. Recording detailed player data and combining this with third-party data and an individual's habits and preferences can be deciphered and used to target players with highly specific marketing. This data can be traded and can fall into the hands of a third party who might use it illegally or otherwise unethically. According to Anders Drachen (2013), standard security practices in game companies include keeping the data secured and not selling it forward, as well as to only analyzing and storing anonymized data. However, it is now more typical to collect and repurpose data, for instance in pursuit of personalized advertisements and marketing.

2.4 Rise of free-to-play games

To better understand the free-to-play model and its popularity, it is important to look at how and why it appeared. The evolution of free-to-play games is not a straightforward line, as its roots and influences can be traced to several historical factors. The development is also not only a one-way process. While many technologies and platforms have influenced the free-to-play model, the free-to-play model has had an influence on games with other revenue models. There are some points in history that have been especially influential for the success of the free-to-play model: notably the development of online computer games in South Korea and virtual worlds in the West, the popularity of social network services, the distribution of smartphones and their marketplaces, and the model's rising popularity among competitive online games.

Free-to-play's roots and online games

The South Korean game industry is one of the pioneers of today's free-to-play model. South Korea's history under the rule of Japan in the 20th century caused South Korea to prohibit the import of Japanese goods, including consoles and games, into the country until 1998. While Nintendo, Sega, and Sony were internationally successful, only smuggled and pirated versions arrived in South

Korea. Due to this, console games did not enjoy a similar kind of success as seen in many other countries of the time. (Donovan, 2010, pp. 309–310.) At the same time, the economy of South Korea was rising, and the government made major investments on establishing a fast broadband internet connection throughout the country.

The combination of a lack of console games and a fast internet made online computer games the most successful products of the South Korean game industry. The concentration on online games raised opportunities for new ways to sell games and content and helped to fight the piracy issue that was blooming in the country. The success of these games revealed an interesting aspect: players were using money to buy virtual content from each other. This realization was one of the keys for the microtransaction model in games. Nexon pioneered the transition to offer games completely free and monetize them through in-game content. (Chung, 2015.) In 2004, the company offered *Crazyracing Kartrider* (Nexon, 2004) for free, including in-app purchases to monetize the game, typifying the free-to-play microtransactions approach. Due to the great success seen in South Korea, game companies started to break onto international markets, and free-to-play games such *MapleStory* (Nexon, 2003; see Figure 1) were popular also outside the South Korean market, reaching Japan, North America, and Europe.

Figure 1. *MapleStory*, a 2D MMO game and an early example of a free-to-play game. All photos and screenshots are by the author



The free-to-play model quickly reached the Chinese market from South Korea in the early 2000s (Donovan, 2010, p. 317). China not only adapted South Korean games, but also built their own free-to-play game industry. Importing games into China was challenging, and getting pirated games was not only cheaper, but also easier (Chung & Fung, 2013). The Chinese government gave considerable support and market advantage to the development of Chinese games, hoping to create a domestic industry instead of importing international games into the country. In 2003, the state focused on supporting online game development, excluding offline games from the funding (Fung & Liao, 2013). The improved broadband coverage and the emerging internet café culture were important factors as well. South Korean online games were successful in China, but ended up being copied by the Chinese companies, sometimes even by the local publishers of those games (Chung & Fung, 2013). The domestic industry adopted the free-to-play model, which proved effective and eventually became dominant in China (Fung & Liao, 2015).

Another early source of the free-to-play model resides in Western virtual worlds, such as the British *Neopets* (Powell & Williams, 1999), Finnish *Habbo Hotel* (Sulake, 2000), and the American *Second Life* (Linden Lab, 2003), which brought microtransactions and their possible influence into wider discussion. Users of these virtual worlds could create accounts and use the services without any costs, but could also pay for premium accounts or in-game currencies. Users buying digital content from each other proved to form a significant economy of itself (Donovan, 2010, pp. 315–316), and the realization was then brought to some Western MMO games.

The first big MMOs in the West were subscription-based, but as the free-to-play model proved effective in the Asian-Pacific region and in virtual worlds, microtransactions became more common in Western online games. Some companies even relied solely upon them, discarding all mandatory subscription fees. As the free-to-play model started to gain success in many areas of gaming, subscription-based online game companies felt the pressure to turn towards it. Especially as not all MMOs with purchase and subscription fees managed to draw the audiences they needed for their games to be profitable, changing to the model offered a possible solution.

Social network games popularize free-to-play

Free-to-play games found a new market in the late 2000s from social network platforms such as MySpace and Facebook, from which the latter was to play an especially crucial role in popularizing the free-to-play model in games. While there

were already some simple games on social network services, the introduction of the Facebook application programming interface (API) in 2007 allowed 3rd party developers to create content, and launched the social network game boom.

Mäyrä et al. (2017) have divided Facebook games into five generations. The first generation included several types of simple games, such as arcade-game clones and single-player games. Soon, however, games started to take advantage of the social networking platform and spread on the platform aggressively, marking the rise of the second generation (Mäyrä et al., 2017). For instance, Blake Commagere and AJ Olson developed a series of monster games: *Vampires* (2007), *Zombies* (2007), *Werewolves* (2007), and *Slayers* (2007). These games incorporated the viral possibilities of involving one's friends on Facebook. The player could add other people into their army by "biting" them, if the bitten friend then also started to play the game. Players could either feed on other players or fight them, collecting experience and game money which they could then use to buy better equipment for their character. Real money was not yet used, but the games did use cross promotion advertisements as their means of monetization. Commagere later stated in an interview that he saw the potential of further monetization, but claimed that the games would lose their charm if the focus would shift into maximizing revenue streams (Au, 2007).

Later, in the third generation of Facebook games, developers started to monetize games on Facebook by giving players the option to gain in-game currency (Mäyrä et al., 2017). In *Mob Wars* (Maestri, 2008), it was possible to gain credits through third-party offers such as taking part in market surveys, or by purchasing paid memberships outside the game. *Mob Wars* rose to be one of the top-grossing applications of the time on Facebook, showing that social network games could be profitable. After the first success stories, the number of games on social network platforms skyrocketed. Zynga brought in their *Mob Wars* equivalent, *Mafia Wars* (Zynga, 2009), which became a long-time hit. Different farming games such as *Happy Farm* (5 Minutes, 2008) and *FarmVille* emerged. These games featured in-app purchases and offline progress mechanics, where the player could either wait or pay to instantly move forward (Paavilainen et al., 2013). Social casino games such as free-to-play versions of poker and slots games also became popular. Many of the most successful games such as *Mafia Wars*, *FarmVille* and *FrontierVille* (Zynga, 2010; see Figure 2) were developed by Zynga. These games typically featured aggressive monetization, and the included third-party offers to gain in-game currency were sometimes seen as suspicious, and even fraudulent. Consequently, these characteristics started to bring social network games unwanted negative attention.

Figure 2. A typical Facebook game, *FrontierVille*, showing soft currency (coins), hard currency (horseshoes), an energy bar, and a friend bar (neighbors)



The model of Facebook games was to a large part based on virality and sharing game-related posts on the Facebook news stream, and getting people to join or rejoin the games in question. Facebook users who did not play games otherwise were drawn into the games too, sometimes to help their playing friends and family (Boudreau & Consalvo, 2014). Ultimately, Facebook changed their API in 2011 in the way that game-related posts were shown on the newsfeed, grouping them together and decreasing their visibility, which in turn forced the games to change their virality tactics.

This marks the beginning of the fourth generation in the history of social games. In this generation, the market started to stabilize, and acquisition and advertising in games started to be more central, which in turn led to aggressive marketing and cross promotion (Mäyrä et al., 2017). At this point, social network games featured a lot of banners and pop-up windows with advertisements. In 2013, Facebook games started to lose their user base. In 2013-2014, Zynga started mass layoffs, and their daily active player count dropped from 53 million to 28 million (Yin-Poole, 2014). In 2015, Zynga shut down several games, including *CityVille* (2010) and *Pioneer Trail* (formerly *FrontierVille*). Many other games were also either shut down or left with minimum maintenance. While some games still operated successfully on Facebook,

some used the platform merely to link to a mobile version. This is what Mäyrä et al. (2017) have called the fifth generation: social network games operating on several platforms. As a discerning feature, even if the actual game would not be playable on the social network service, it might still serve as user acquisition, including a link to the game and allowing the social sharing of events from the now more popular mobile game.

Free-to-play conquers mobile platforms

In the early 2010s, Apple and Android platforms provided new avenues for free-to-play games, while the popularity of social network games started to decline. Mobile games had existed since the early days of GSM phones, including simple games such as *Snake* (Armanto, 1997) that were embedded in the phones, while later it was possible to download small games for free or for a small price. This, however, changed dramatically with the introduction and increased distribution of smartphones. These phones were more powerful and could include more complex games, and the built-in marketplaces of Apple's AppStore and Google's Android Market (later known as Google Play) made installing and paying for games easier. Both major platforms included sales, in-app advertising, and in-app purchases, all important features in relation to how the mobile game market evolved (O'Donnell, 2017).

In the beginning, smartphone games were typically premium, having a small one-time purchase fee. Due to the sales and the saturation of the market, however, prices quickly came down, and when games could be purchased for less than a euro, it became difficult to sell games for higher prices (O'Donnell, 2017). Again, the free-to-play model offered a solution. King released their browser-based match-three game *Candy Crush Saga* on mobile in 2012, and during the same year, Supercell published their farming game *Hay Day* (Supercell, 2012) and their online-strategy game *Clash of Clans* (Supercell, 2012) on iOS and later on Android. The three games surpassed all premium games and have dominated among the top-grossing lists for several years. The revenues of free-to-play mobile games started to not only surpass those of premium mobile games, but all digital games including computer and console games. This has now escalated to a point where almost all of the top-grossing apps on mobile use the free-to-play model, the majority of which are games (Alha et al., 2016). In 2016, Niantic published *Pokémon Go*, the first location-based game to reach mainstream popularity and one of the most successful mobile games. *Pokémon*

Go's success was especially visible as the game includes walking and uses real-world locations, and players convened outside to play it (see Figure 3).

Figure 3. *Pokémon Go* view in and out of the game in an area where players have convened to play the game and share lures, items that attract more Pokémon creatures



Competitive computer games turn to microtransactions

The success of the model allowed it to spread to most platforms and genres, including influencing the design of games using other revenue models (Davidovici-Nora, 2013). However, the model has not had similar success on all platforms and games types. In addition to MMO and casual games, competitive online computer games have been especially well suited to the model, and successful cases have inspired its use in directly competitive games.

As competition is at the center of these games, developers have typically tried to create monetization models where direct power purchases are avoided, and especially cosmetic purchases are favored. Some models focus on faster advancement in

unlocking content, helping to avoid time-consuming grinding. These features make these types of games more accepted as free-to-play games, as they help prevent them from becoming pay-to-win. They are also typically seen as being more hardcore than other free-to-play games, which is often valued by gamer hobbyists.

One genre comprising almost completely of free-to-play games since their appearance are multiplayer online battle arenas (MOBA), which are team-based strategy games. In this game type, players compete in small teams, trying to destroy an opponent's base while protecting their own. The genre was inspired by *StarCraft* (Blizzard Entertainment, 1998) and *Warcraft 3* (Blizzard Entertainment, 2002) mods, and gained further popularity in 2009 when Riot Games published *League of Legends* (Riot Games, 2009) under the free-to-play model. Several MOBAs have become popular esports titles.

Wargaming (a Belarusian game company) published *World of Tanks* (Wargaming, 2010) in 2010, founding it on the free-to-play revenue model. The game was a competitive team-based war game where the players would fight in teams, each player maneuvering a tank and trying to destroy other tanks. It went on to be very successful and was later followed by *World of Warplanes* (Persha Studia, 2013) and *World of Warships* (Lesta Studios, 2015). In 2012, *Team Fortress 2* (Valve, 2007), a team-based shooter game, transformed from a one-time payment model to free-to-play. The game underwent substantial changes, and it was later reported that the game's revenue had multiplied by a factor of 12 (Miller, 2012). This example encouraged even more game companies to turn towards the model.

Figure 4. In *Fortnite Battle Royale* players compete against each other until one player or team is left



Another newer popular genre typically employing the free-to-play model includes battle royale (BR) games, where a large number of players compete on a single map, trying to kill others and to be the last player (or team) standing. While the first extremely successful BR game, *Playerunknown's Battlegrounds* or *PUBG* (PUBG Corporation, 2017) was a premium game, its follower, *Fortnite Battle Royale* (Epic Games, 2017; see Figure 4) used the free-to-play model and quickly surpassed *PUBG* both in player count and revenue. In 2017, Blizzard's real-time strategy game, *StarCraft 2* (Blizzard Entertainment, 2010) transitioned to free-to-play, offering the first part of the campaign and free access to multiplayer content, while *Counter-Strike: Global Offensive* (Valve, 2012) turned to the model in 2018.

Finally, collectible card games (CCG) are worth mentioning here. Games like *Hearthstone* and *Magic: The Gathering Arena* (Wizards Digital Games Studio, 2019) seem to suit the free-to-play revenue model well, especially due to the monetization model of original physical CCGs such as *Magic: The Gathering* (Garfield, 1993). In a CCG, players create their own decks of cards, and can get additional cards by buying booster packs. The boosters include a random selection of cards, and finding the suitable cards typically involves going through several boosters. The publisher regularly brings out new generations of cards, keeping the pressure on to buy new packs. This resembles the loot box mechanic and has been implemented in several free-to-play CCGs. CCGs are relatively easy to implement as multiplatform games, and especially the more popular ones are often playable both on computer and mobile platforms.

Interestingly, other big free-to-play computer productions have also recently expanded to mobile. Games such as *Fortnite* and *Counter-Strike: Global Offensive* have their mobile versions, and *League of Legends* is set to arrive on the mobile market in 2020. As mobile free-to-play market continues to offer the most profitable platforms, these moves further strengthen the position of the leading companies. Simultaneously, it likely validates smartphones as more “real” as gaming platforms in gamer communities.

2.5 Criticism

Digital games have long been a target of criticism, as have any new media forms. Addiction, violent and sexual content, sexism and racism in games, and the effects of playing games especially on children and young people have been debated in research and by legislative bodies. Controversy reaches industry practices as well,

typical problems being a crunch culture and the lack of diversity among employees. These points of criticism are also present in free-to-play games, but the model has raised other problems or emphasized existing ones.

One of the emphasized points of discussion in free-to-play games are their addictive or manipulative qualities. Compared to one-time payment games that collect the same amount of money from each player, in free-to-play games, a player has unlimited possibilities to spend money. This can become problematic for some players, and the combination of addiction and spending can lead to economic troubles. In this regard, free-to-play games resemble gambling, which has struggled with its own ethical guidelines and problematic playing for a long time. Free-to-play casino games in particular have been suspected to attract minors towards real money gambling games (King et al., 2014). The controversial aspects in free-to-play game marketing have been studied at the European Union level, as well (European Commission, 2014).

Many of the free-to-play games and their mechanics utilize (knowingly or unknowingly) behavioral economics theories, which examine decision making in economic situations. According to Juho Hamari (2011), the tendencies for averting losses in games can be explained for instance with the *endowment effect* (Kahneman et al., 1991), according to which people value owned goods more than identical goods they do not own, and with the *sunk-cost fallacy* (Kahneman & Tversky, 1979), according to which people are more willing to invest in something they have already invested in before. These have been utilized for instance in farm games by decaying crops if not collected in a certain timeframe (Hamari, 2011). Losing crops the player has grown themselves can feel uncomfortable and even emotional (Paavilainen et al., 2013), but which can then be corrected with money or in-game currency. Another example is *income quota anchoring* (Camerer et al., 1997), which explains people's tendency to set quotas for themselves. In games this can be utilized for instance with daily quests and rewards, which players are more inclined to complete (Hamari, 2011). While utilizing these practices can improve the game's possibility of success and make the game more appealing, they have also been criticized for being manipulative and coercive (Shokrizade, 2013). Thus, drawing the line between using the knowledge to cater for better gameplay experiences and exploiting cognitive biases is not simple (Zagal et al. 2013).

Connected to this, José Zagal et al. (2013) provided a concept of a *dark design pattern*, which they define as “a pattern used intentionally by a game creator to cause negative experiences for players which are against their best interests and likely to happen without their consent” (p. 7). They also discuss players being “manipulated”

against their will through these patterns. They present three categories for these patterns: temporal, monetary, and social capital-based dark patterns. For instance, temporal dark patterns can include grinding, monetary patterns include paying to skip content, and social capital-based patterns impersonating as the player's friend. Many of the listed dark patterns can be connected to free-to-play games. As Zagal et al. (2013) note, implementations of the patterns can be either "light" or "dark", and the interpretation of acceptability depends on the player. Furthermore, the authors claim that as players gain literacy, the "tricks" no longer work, and players may regard them with "disdain".

From the critique directed towards specific monetization mechanics, especially loot boxes have recently been at the center of the discussion. As mentioned in Chapter 2.3, loot boxes are random chance items that the player can buy or receive as a reward. This discussion became especially heated after the launch of *Star Wars Battlefront II* (DICE, 2017), a premium game that in addition to the full purchase price included prominent content locked behind microtransactions and a loot box mechanism. Even though the mechanism was later changed after vocal resistance, the visibility of the case led to increased criticism towards loot boxes on a more general level (Perks, 2019). The resemblance between loot boxes and gambling is especially controversial. In many games, opening loot boxes has been made to be as exciting as possible, and receiving rare items can feel similar to winning with a lottery ticket (see Figure 5). Unlike gambling, however, the content of the loot boxes typically cannot be directly transformed back into money, and the value of the digital items stays inside the game. However, virtual content and accounts can be sold in official or unofficial marketplaces. The monetary value of received items is a major point of debate when considering the regulation of loot boxes. In some countries, certain loot box mechanics have already been limited or banned (Holt, 2018). Using loot boxes can be more accepted in CCGs where buying and opening booster packs is familiar from the physical origins of the genre (see Figure 5).

In addition to manipulative design and addiction, the general quality of game experience has been at the center of the discussions. The revenue model changes the way games are designed, so affecting the experience (Alha et al., 2014; Lin & Sun, 2011; Paavilainen et al., 2013). The revenue model needs to be considered in the design, as the in-app purchases need to function as a part of the gameplay (Hamari & Lehdonvirta, 2010; Hamari & Järvinen, 2011), and the optimal experience of the player is no longer the sole goal of the designer. The developers must get a portion of the players into spending money in order to make the game sustainable and profitable. Following the game analytics explained in Chapter 2.3, developers might

choose the most profitable features, so undermining the quality of gameplay experience and the longer sustainability of the game. Finding the balance between a good gameplay experience for free players and value for money for paying players is a challenge that did not exist at the current scale in the pre-free-to-play era. Therefore, the free-to-play model and the design choices connected to it cause playability problems and can negatively affect the game experience (Paavilainen et al., 2015).

Figure 5. Opening a card pack in *Hearthstone* (Blizzard Entertainment, 2014); the player can open each card individually while the glow shows the rarity of the card beforehand



The imbalance between paying and non-paying players has drawn further attention. Typically, only a small percentage pay for the games, and the majority of the revenue comes from an even smaller portion of high-spenders. If the game's revenue is based on these high-spenders, there is a risk that the game's design starts to cater to these groups in order to maximize profits. There are issues regarding fair play as well, and if in-app purchases give an advantage to paying players, then the game can become pay-to-win and thus unfair (Lin & Sun, 2011; Alha et al., 2018). Both paying and non-paying players are important for the game to function, and while the paying players bring the actual revenue, ultimately it is the non-paying players who create the feeling of community (Tyni et al., 2011).

The game industry is highly competitive and hit-driven, which is another challenge that is emphasized with the free-to-play model. While the model has been extremely successful for some companies, only a few games and companies make it

to the top, with the majority of games receiving little or no revenue (Pinchefskey, 2013). The list of games that make it to the top is relatively stationary, and the same games can dominate the charts for long periods of time, while new games only rarely make the top or stay there (Nieborg, 2016). Companies with hit games and resources can keep acquiring players with money for their new games as well, further stagnating their power position.

2.6 Summary

In this chapter, I have discussed the free-to-play revenue model by looking into its characteristics, background, and challenges. There are numerous ways to gain revenue from games. The models have changed throughout the history of the digital game industry, and in this regard, free-to-play games are not special, nor did they appear out of nowhere. The historical perspective shows the different roots and gives reasons for the success of the model.

The free-to-play revenue model does have distinguishing characteristics, from which I have discussed two important aspects: the use of various types of in-app purchases and the utilization of numerous user metrics in the development process. These aspects have significant effects on the design of free-to-play games and are partly to blame for the controversial aspects that are connected to them. The critique focuses especially on addictive, even manipulative gameplay that can cause problematic playing behavior. Further criticism targets the quality of the games, fairness issues especially between player groups, and the difficulty for new game companies to break through and gain enough revenue to support their developments.

In the next chapter, I will continue to discuss the free-to-play model by using a systematic literature review to examine how it has been approached in academic research.

3 LITERATURE REVIEW

This literature review is based on Article VII originally published in the *Proceedings of DiGRA 2019*. The literature review charted the research done so far on the topic of free-to-play, finding focus points and gaps in the literature, and proposing future research agendas. The purpose of the review is to discuss the state of the free-to-play research, and to position and show the importance of the work done in this dissertation. The review was conducted at the end phase of the dissertation process and is used as confirmatory evidence of the need of the research conducted, as well as to connect the research of the dissertation to the existing body of research.

3.1 Review process

The review procedure followed the five-step framework described by Jan vom Brocke et al. (2009): 1) Definition of review scope, 2) Conceptualization of the topic, 3) Literature search, 4) Literature analysis and synthesis, and 5) Research agenda. The scope of the review was to achieve as comprehensive view as possible of the free-to-play game research done so far.

Article VII used Scopus as the primary database for the literature search, as it indexes a wide variety of relevant journals, conferences, and book chapters. As a drawback, Scopus emphasizes natural sciences and engineering (Mongeon & Paul-Hus, 2016). To remediate this focus, I expanded the literature search from Article VII by conducting backward and forward searches for the articles that arose in the original review. This widens the scope both to articles missed with the initial search as well as reaches outside Scopus. The review can thus be better trusted to have reached a good representation of the research done on free-to-play games so far.

To obtain as complete a collection of related documents as possible without getting too many unrelated hits, the search words in Scopus included “game*” (to cover both game and games) and “free-to-play” or “freemium” (to include both of the terms commonly used to refer to the free-to-play model). To find documents that included the topic in a relevant way, these words were set to be included in the title, abstract, and/or the keywords. The query was targeted at journal articles,

conference papers, and book chapters. The time frame was set to include all the documents published up to 2018 at the latest. The final query used on Scopus was thus:

```
TITLE-ABS-KEY ((game*) AND ((free-to-play) OR (freemium))) AND PUBYEAR  
< 2019 AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp")  
OR LIMIT-TO (DOCTYPE, "ch"))
```

The search on Scopus was conducted in May 2019, resulting in 116 documents. From these, 1 document was removed as a duplicate, 2 documents due to the full version being unavailable, 2 documents due to the paper being written in a language other than English, and 2 documents for not being peer-reviewed, academic documents.

The abstracts of the remaining 109 documents were examined, and in this process, 13 documents were removed for being false hits. This included documents that 1) included the phrase “free to play” in a meaning different from the revenue model; 2) included the term “free-to-play” but did not discuss it in a relevant fashion; 3) referenced freemium connected to something other than games; and 4) discussed a free-to-play game, but not its free-to-play nature in any relevant manner. In addition, 4 documents were removed at this phase due to there being more than one similar paper by the same authors. In these cases, the later and more extensive publications were included. In the end, 92 documents from the Scopus search were included in the actual review process.

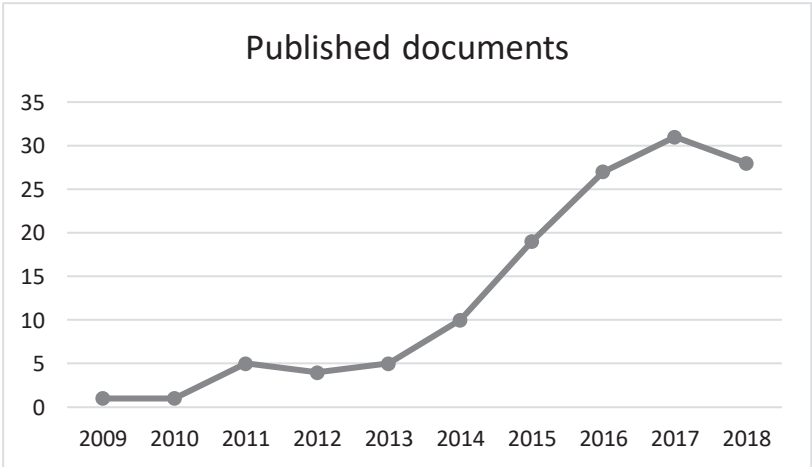
In January 2020, the chosen documents were used to conduct backward and forward searches in Scopus. The backward search looked at the articles that the chosen articles used as references, while the forward search looked at articles that had cited the chosen articles. The backward search also included the referenced documents outside the Scopus database, reducing the Scopus bias in the review. From these two searches, articles that were published during the same time period as the Scopus articles and included the term “free-to-play” or “freemium” were examined. These two searches were combined, and duplicates between them were removed. In addition to removing false hits, 64 documents were removed for already being included in the original search, 3 documents for the being written in a language other than English, 3 documents due to there being more than one similar paper by the same authors, and 42 documents for not being peer-reviewed, academic documents (extended abstracts were also excluded). After this process, 46 documents from the backward and forward searches were included in the actual review process, totaling 138 documents.

The selected 138 documents were coded by publication year, publication type, data type, and method type. After this, each document underwent a textual analysis based at least on its abstract and conclusions, and categories of research topics were formed based on this analysis. The first round of analysis was done with the documents from Scopus, and the second round refined the categories with the results of the backward and forward searches. The results of the first round of analysis are included in Article VII, while the following subchapter shows the refined categories that were formed after the second analysis round.

3.2 Overview

Free-to-play has attracted increased interest among researchers starting from the early 2010s (see Figure 6). A slight increase in the number of free-to-play research happens in 2011, after social network games had risen in popularity and the model had gained more attention. During and especially after 2014, there is a substantial increase which coincides with and after the free-to-play model had reached commercial success on mobile platforms. The peak of the published documents is in 2017. As documents from 2018 were the latest to be included, it is too early to say whether the publication rate has stagnated or is even in decline, as seems to be the case between 2017-2018.

Figure 6. Number of included documents by their year of publication in the literature review



The documents including empirical studies were categorized based on their data and analysis method types. Altogether, 112 documents included empirical studies, with

some studies including several types of data. In these cases, the main data type was included when additional data was used merely to support the main data, for instance pre- and post-questionnaires when studying psycho-physiological data. If the study included more than one main data type, all of these were included separately. In some cases, the data included was not described in detail or included diverse data. In these cases, the more general level of a data type was included, as in ethnographical data or workshop data. The division is listed in Table 4 and shows a strong emphasis on quantitative analysis methods over qualitative and mixed methods, and on log and survey data over other data types.

Table 4. Data and method types in empirical documents in the literature review

Data type	Frequency	Method type	Frequency
Log data	42	Quantitative	81
Survey data	36	Qualitative	23
Game analysis data	9	Mixed methods	8
Interview data	8		
Statistical data	6		
Research articles	4		
Forum posts	4		
Psycho-physiological data	3		
Ethnographical data	2		
Picture data	1		
Workshop data	1		

The chosen documents were further analyzed and categorized into themes based on their study topics (see Table 5). The first categorization was reported in Article VII based on the Scopus data, and I further refined it with the inclusion of the second dataset.

The two biggest themes among the documents were those of monetization and retention. Monetization was typically approached by looking at how paying in games can be increased. The studies on retention focused especially on predicting and preventing churn and improving retention. While monetization was the most frequently studied subject, it almost exclusively focused on in-app purchases and not on revenue gained through in-game advertising. Acquisition, which forms the third pillar of the ARM model, had the least attention among the studies.

Table 5. The themes of the documents in the literature review

Theme	Frequency
In-app purchases and monetization	37
Disengagement and retention	21
Connection to gambling	12
Applying the model elsewhere	12
Characteristics of the model	11
Experiences and attitudes	10
Culture, society, and politics	6
Acquisition and advertising	6
Usability studies	5
Player behavior	5
Problematic playing habits	5
Industry studies	2
Business strategy	2
Predicting success	2
Reasons to play	2

Gambling studies were interested in free-to-play gambling such as social casino games, in which the player can spend money on gambling but cannot win real money, only in-game currency. These studies were especially focused on whether the players of free-to-play gambling would transfer into real-money gambling. These aspects are important when considering regulating free-to-play gambling games.

Another significant line of study was taking features from free-to-play games and applying them in other games or game-related applications. The success of the model has especially led the designers of serious games to try and harness the attraction. In these cases, the in-app purchases were sometimes replaced with other mechanics, such as donating the money to charity or replacing paying by performing healthy tasks. These studies typically had a prototype game that tested the theory, but the question of whether free-to-play mechanics could be detached and reattached to other games was not answered conclusively.

I continued the analysis for this chapter by classifying the themes on two levels: their study target, and the higher-level aim of the study. The study targets were classified into four levels: players, games, industry, and society. Most of the documents studied players through using actual behavior data, reported behavior

through surveys, or interview data. Games were studied by analyzing single or multiple free-to-play games, by looking at statistical data such as revenue and review ratings, or by using the features of free-to-play games in other types of games. The game industry or the creators of the games were the focus of only three studies among the documents, and included looking into game developers’ practices and their attitudes and opinions. The societal level also remained understudied. In these studies, the focus of the research was wider, including looking at the model in relation to our society through a philosophical or a political lens. Studies in this category are most likely to be underrepresented with the review method, as the free-to-play or freemium terms might not always be in focus.

The second level of classification also included four categories: business, quality, negative issues, and practices. These categories were not always clear-cut. The business side focused on improving or modeling the ways the games gain revenue or increase retention, while studies in the quality category focus on improving the quality of the games, for instance through usability studies. These two categories have a connection, but their focus is slightly different. The third category focuses on negative causalities, such as addiction and problem gambling. The fourth category is the broadest, if not the most frequently studied, and looks at player practices and attitudes, how games are built and function, industry practicalities, and how these games and their practices fit into society.

Table 6. The classifications of the documents in the literature review

	Players	Games	Industry	Society	Total
Business	71	1			73
Quality		17			17
Negative issues	17				17
Practices	11	11	3	7	31
Total	99	29	3	7	138

The classification and the position of the documents in them are shown in Table 6, illustrating the focus on players and business. While each of the articles were placed in only one category, many of the documents had connections to other categories. For instance, a study focusing on industry practices might also aim to improve the business side, and a study looking at player practices might also touch on negative sides of the games such as ethical concerns or addiction.

The lack of studies under some combinations of categories does not automatically signal a need to focus on those connections, but a more analytical approach is needed to consider the research gaps. The next subchapter will discuss this aspect and introduce the identified research agendas.

3.3 Research gaps and agendas

The review shows that the studies on free-to-play heavily focus on business aspects and take the form of quantitative studies. While this research is important considering the economic magnitude of the revenue model, other research areas are left without much attention. Free-to-play games form such a major phenomenon that it needs to be studied from multiple perspectives with, for instance, humanities and social science involvement. In Article VII, four research agendas were introduced based on the first round of analysis:

Agenda 1: Industry studies to understand the practice of free-to-play development

Agenda 2: Qualitative studies to understand player experiences

Agenda 3: Close readings to understand free-to-play game characteristics

Agenda 4: Studies to understand the meanings of free-to-play games in our culture, society, and politics

The first agenda raises an important link between research and practice. Many of the studies included in the review focused on creating new models or improving previous ones. While these models are meant to be implemented in practice, there is not much knowledge as to whether and to what degree free-to-play companies actually use this research. Furthermore, to understand the everyday practice of free-to-play game development, research needs to have a dialogue with game companies. The lack of connection between research and practice is common between game studies and game industries, and this is even truer when considering free-to-play game development.

The second agenda calls us to look at player experiences with an exploratory, qualitative toolset. To understand the deeper meanings that lie behind the quantitative data typically used in free-to-play research, we need to explore player perspectives from another angle. Focusing on log data and quantitative surveys can improve retention and revenue in the short-term, yet might not always lead to better game experiences. This can hurt the sustainability of the free-to-play model in the

long-term. In addition, while there has been a significant, vocal criticism towards the revenue model by players, media, and game creators alike, these opinions and attitudes have rarely been studied and typically omit large parts of the player populations.

Close readings and case studies of games such as those of Tyni et al. (2011), Gruning (2013), and Evans (2016) help to understand free-to-play games and how they work. These studies are still quite rare, and as free-to-play games evolve and change rapidly, we need to keep updating our knowledge of the updated and more recent titles. Furthermore, most of the studies either concentrate on a specific platform or a genre, while some address free-to-play games as one entity. We still have little understanding of the differences between free-to-play game types, and the model continues to cover an increasingly wide variety of games and platforms. The gameplay and attitudes towards different types of games vary significantly. Close readings could reveal more about the common features of this fractured field, and the need for understanding different business segments of different types of free-to-play games has also been noted by Flunger et al. (2017).

Free-to-play games are often regarded as an inferior or less serious mode of gaming (Paavilainen et al., 2013; Alha et al., 2018), and this might influence the researchers' motivation to study the games as meaningful objects or experiences. However, these games can also provide meaningful experiences (Paavilainen et al., 2013), facilitate the formation of gaming communities and new relationships (Alha et al., 2018), and give new spaces for family interaction and leisure over geographical distances (Boudreau & Consalvo, 2014). Many free-to-play games are engaging to diverse audiences, and these experiences are equally important to hear and understand.

Especially as free-to-play games represent a vast majority of the market and are played by wide audiences, their implications on game cultures and culture in general need to be studied. Games do not exist in a vacuum, and studies into free-to-play games intertwining with culture and politics such as those conducted by Nieborg (2015) and Möring and Leino (2016) are especially important.

While the free-to-play model has been criticized for its negative influences, only a few documents examined it from this viewpoint. In these cases, the focus was on addiction and problematic behavior, and the ethics of free-to-play game design were rarely brought up despite them being a major topic in public discourse surrounding the games. As free-to-play games are popular and widespread, their impact on society can be considerable and merits closer inspection of both beneficial and detrimental aspects.

It is noteworthy that the research found in this literature review is heavily concentrated in Europe and North America, and only included English language documents. As there are substantial differences in the free-to-play game market for instance between Eastern and Western societies (Page, 2012; Chen et al., 2016), the skewed geographical concentration on the West ends up mostly portraying the Western free-to-play model. Understanding the differences between free-to-play gaming cultures and taking these into account when studying free-to-play phenomena are crucial aspects, as also noted by Page (2012).

3.4 The position of this dissertation

The articles in this dissertation offer less-studied perspectives towards the free-to-play model. Table 7 illustrates how the studies included in this dissertation situate in the classifications introduced in Chapter 3.2.

Table 7. The classifications of the dissertation's articles

	Players	Games	Industry	Society
Business	IV			
Quality		II		
Negative issues				
Practices	V, VI	III	I	

The articles included in this dissertation contribute to the research agendas 1-3 discussed in Chapter 3.3:

Agenda 1: Industry studies to understand the practice of free-to-play development (Article I)

Agenda 2: Qualitative studies to understand player experiences (Articles V and VI)

Agenda 3: Close readings to understand free-to-play game characteristics (Articles II and III)

While not directly answering to these research agendas, Article IV studies the players' motivations to pay in games on a more concrete level than the majority of the articles studying paying in free-to-play games. Therefore, it increases the understanding of the player's reasoning behind the purchases, instead of more abstract qualities such as enjoyment or ease of use that are typically studied.

Furthermore, the discussion of the dissertation connects the results and their implications to the wider societal and cultural level, thus complementing the fourth and final agenda:

Agenda 4: Studies to understand the meanings of free-to-play games in our culture, society, and politics

3.5 Summary

In this chapter, I have introduced the results of a literature review charting the research on the wide topic of free-to-play games. While the review inevitably missed studies that do not categorize themselves as free-to-play research, the review shows a larger picture of focus points and gaps in free-to-play research. The importance of free-to-play games as business is shown in the majority of the studies focusing on understanding or improving the economic aspects connected to the games. Studies related to the significance of game experiences are in the margin, as are studies connecting games to the wider context of culture and society. To correct this imbalance, I have suggested future research agendas.

I have further shown how my research is positioned in this area, and how they relate to the agendas. The studies I have included in this dissertation locate into the less-studied areas of free-to-play research, while the dissertation as a whole approaches the free-to-play revenue model as a transformative force in our game culture.

In the next chapter, I will continue to contextualize my work in the field of game studies and discuss the methodological choices adopted in this dissertation and in Articles I-VI.

4 CONTEXT AND METHODOLOGY

This chapter presents the context of my research. I will position my dissertation in game studies, drawing influence from social sciences, design studies, and human-computer interaction, and discuss the nature of game studies and its connections to other disciplines. I will continue to discuss the methodological choices and introduce the research processes used in each of the articles.

4.1 Positioning

This dissertation positions itself in game studies, which as a relatively young field does not have established research traditions, and instead combines, borrows, and modifies them from other fields. Game studies can be approached with various methodological toolkits and theories, which allows rich, diverse ways to examine the complex phenomena around games (Mäyrä, 2008, p. 2). Since the formation of the field, game studies has frequently been described as an interdisciplinary and multidisciplinary field, with these terms sometimes used interchangeably (Deterding, 2017) and with little reflection on what they mean for the field and its future (Waern & Zagal, 2013). While a multidisciplinary approach includes juxtaposing different approaches to work side by side, interdisciplinary work should include true and intentional interaction and integration between the fields (Klein, 2010). While this kind of integrative work is sometimes conducted in the field of game studies, Sebastian Deterding (2017) notes that current game studies comprises of a narrow interdiscipline at best, and lacks integration in its objectives and methods, as well as a collaboration between diverse disciplines.

The fragmented nature of the research around games has caused it to not always be recognized as a discipline, but rather as a combination of approaches that are merely united with the subject matter. In an attempt to create a more robust discipline, game studies defined its identity in the beginning of the 21st century, partly by standing against existing fields (Deterding, 2017). The positioning of game studies has been a way to protect, secure, and justify the discipline, sometimes in a way that dismisses and excludes some approaches while valuing others more highly

(Phillips, 2020). Currently, game studies has a focus on cultural studies and digital games, and looks at games as objects and experiences, while for instance studying game creation processes and games as designed and developed products has been in the margin (Kultima, 2018, p. 13). Some approaches to games such as gamification and free-to-play games have been directly downplayed and criticized as a “perversion” or “dangerous” (Bogost, 2011; 2014), policing which games are worth studying. Another reason for the field’s narrowing is the legitimization of games as a target of research, which in turn has established the relevance of game research outside game studies and in other disciplines, such as in human-computer interaction (HCI). As a result, game studies can now be seen as a relatively closed sub-community of a larger game research field (Deterding, 2017).

Deterding (2017) suggests that we can either strive for a unified game studies as cultural studies and allow game research to continue spreading in other intra-disciplinary fields, or diversify and deepen the interdisciplinary nature of game studies and include more approaches, such as design orientation. This dissertation positions itself as an attempt to follow the latter road, looking at the free-to-play phenomena from multiple aspects and drawing influence from social sciences, design research, and HCI, and creating a synergy between these approaches. The research in this dissertation can be considered as both multidisciplinary and interdisciplinary. On the individual article level, each of the studies has its own approach that draws from different research traditions. On the dissertation level, those approaches are integrated into solving problems and answering questions together.

4.2 Methodological approaches

4.2.1 Overview

Research traditions from social sciences are frequently used in game studies, and can provide answers about the use, attitudes, or influences of phenomena such as free-to-play games. As a large part of this dissertation aims to see how the free-to-play revenue model has influenced players, perspectives, and experiences, approaches from social sciences are suitable to extract information and have been used in several of the articles. Typical methods used to gather data in the social sciences are surveys (used in Article IV and IV) and interviews (used in Articles I and V).

In articles looking at games, the traditions of design research and HCI have been seen as valuable. Annakaisa Kultima (2015) has encouraged game studies to emphasize design research more as a theoretical background. There are several ways to conduct and categorize game design research (see Kultima, 2015 for a review). According to Nigel Cross (1999), design research can be divided into design epistemology (designerly ways of knowing), design praxiology (practices and processes), and design phenomenology (form and configuration of artifacts). As the included articles studying games focus on understanding the design of published games, they can be seen as design phenomenology research.

From the articles in this dissertation, Article III is the closest to follow a design research path by looking at the design of mobile free-to-play games through game analysis. However, the dissertation as a whole can be seen being influenced by design research, as it deciphers the influences of a revenue model on games and their design, and discusses the challenges that free-to-play design processes include. This connection between research and practice has been voiced as being important yet challenging. There is a gap between research and practice, and even when research makes claims to be of use for game development practices, there is little evidence of whether it is actually used. Understanding and practicing game design studies offers a way to bridge this gap (Kultima, 2015), and has potential for both sustaining game studies due to its impact and connecting game research across disciplines (Deterding, 2017).

Article II uses an approach from HCI to evaluate social network games. HCI emerged in the late 1970s (Carroll, 2003), and over the last couple of decades, games and game-related phenomena have been increasingly included as study targets. This can be seen in the rise of game-related publications in HCI venues (Carter et al., 2014), as well as in the establishment of game-specific venues such as the CHI Play conference, launched in 2014. Marcus Carter et al. (2014) reviewed game research in CHI conferences in 2003-2013, finding four research paradigms: operative, epistemological, ontological, and practice game research. Operative game research deals with games with a purpose, such as games promoting exercise or learning. Epistemological game research uses games to understand technology, and ontological game research is concerned with understanding the design and ontology of games. Practice game research covers practices and experiences when interacting with games, toys, or technology. Game research in HCI has been relatively isolated from game studies, apart from coverage under the last paradigm which considers game or play experiences (Carter et al., 2014). The study in Article II would fall under

the ontological category, as it tries to understand playability problems and the reasons they exist in the domain of social network games.

The articles included in this dissertation include qualitative, quantitative, and mixed methods approaches, while having an emphasis on qualitative research. Furthermore, each of the articles has their own, separate datasets. The weakness of this approach is that it is not possible to dive as deep into individual issues as concentrating on singular or closely connected datasets would allow. However, its strength is that by approaching the research questions with multiple data sources, study targets, and methods, I have been able to capture different dimensions of the topic in hand, offering a better view of the manifold influences of the free-to-play model. As the free-to-play revenue model is still a relatively young phenomenon and lacks academic understanding, it is important to cover a wider view and raise issues which can then be used and continued with further research.

For similar reasons, the research in this dissertation is in many parts exploratory and descriptive in nature (Stebbins, 2001). Free-to-play games form a young, rapidly changing and evolving field that needs agile and fresh approaches to extract information. In exploratory research, researchers need to be careful how their own position and perspectives influence the studies. Many of the studies are co-authored, and involving several researchers in the research process has helped to avoid this problem. The theory formation has been primarily inductive, as in many cases there have not been suitable or well-formed theories that would take into account the characteristics of the study topic. Adopting exploratory and inductive approaches do not mean a disconnect from the surrounding research, but rather an approach that is iterative and conducted across several studies (Stebbins, 2001, pp. 5–9).

Table 8. The research targets, data type, and method type of the included articles

	Target	Data type	Method type
Article I	Industry	Interviews	Qualitative
Article II	Games	Games, playability problems	Qualitative
Article III	Games	Games, statistics	Mixed
Article IV	Players	Survey	Quantitative
Article V	Players	Interviews	Qualitative
Article VI	Players	Survey	Mixed

While the focus of the dissertation and the studies is on the revenue model, it is studied through games, players, and creators. Table 8 summarizes the research targets, data types, and methods types. The collection and use of the data for each

article are explained in more detail in the last subchapter, while the next subchapters discuss the methodological choices connected to different research traditions.

4.2.2 Surveys and interviews

Surveys are a useful method to collect large datasets especially in quantitative research, and often used in social sciences. According to the literature review in Chapter 3, quantitative approaches are most frequently used in free-to-play game research, and surveys are a typical way to gather the quantitative data. While log data (another often-used data type in free-to-play game research) can reveal actual player behavior, surveys are based on the subjective experiences and reporting by the respondents. Therefore, aspects such as money and time spent on free-to-play games that are reported in surveys are estimates, and the importance of purchase motivation does not necessarily equate with actual purchase behavior. On the other hand, log data cannot give answers as to why players make choices, how they value different purchases, or how they act outside a specific game. In this regard, surveys can help.

To tackle the estimations made by respondents, surveys try to reach a large respondent pool that can even out any under- and over-estimated values. However, it is important to note that online surveys that gather respondents through specific venues such as the gaming magazines featured in Article IV, cannot make claims of the overall playing population, as they are not representative. Using gaming magazines to spread the survey gave us access to large playing audiences, but simultaneously it distorted the data. Specifically, it emphasizes gaming hobbyists and young males that are still the main audiences of said magazines. Therefore, we could not make claims on how many spend money on free-to-play games, or the division of gender or age among players. We can, however, create models and look at correlations and connections, with these restrictions in mind.

Surveys can also be used to acquire qualitative or mixed data. By having open questions, surveys can resemble structured interviews and collect qualitative data, as featured in Article VI. By having a large respondent pool and by coding and connecting the qualitative data with closed questions in the same survey, the results can have qualities of both qualitative and quantitative data. Analyzing open questions in large surveys can be time-consuming, but can give valuable information that is not possible to obtain with quantitative methods or with a smaller number of interviews. The coding process can be divided among several researchers, and the reliability of

the coding can then be enhanced with clear analysis methods, code books, and tested with reliability tests.

The downside of collecting qualitative data through surveys is that the researcher cannot ask additional questions to specify or clarify the given answers, or to probe more deeply into something that is potentially interesting. Surveys and interviews can also have connections between studies, and this work is important to compensate for the weaknesses of each approach. While one approach to this is to operationalize qualitative research into operators, another way is to pick interviewees from a survey to gain a deeper insight into the thoughts and experiences of the chosen respondents, as featured in Article V.

Qualitative studies help to provide a holistic understanding of the phenomenon and its surroundings (Mäyrä, 2008, p. 160). Interviews are one of the central methods of qualitative social sciences and allow acquiring rich data from informants. Their aim is not to arrive at statistical proof or generalizations. Instead, interviews are especially suitable in understanding the informant's own voices, interpretations, and experiences. As we were looking into the opinions, attitudes, and ethics revolving around the free-to-play model, interviews were well suited to this goal. In addition, the interviews gave insight and a deeper understanding of experiences and behavior in relation to free-to-play games.

Qualitative research and interviews in particular include caveats that are important to take into account. Inexperienced interviewers especially might impose their own preconceptions on the informants. Including multiple interviewers in the process improves the results, which both interview studies took advantage of. Additionally, in qualitative analysis, the researcher must carefully check for clues and make observations, solve riddles, and ultimately explain the evidence (Alasuutari, 1999, pp. 38–48), and the process includes several rounds of analysis of the research material.

4.2.3 Playing games as a method

Playing games is an important method when trying to understand games (Aarseth, 2003; Mäyrä, 2008; Karppi & Sotamaa, 2012). When researching games through playing, it is important to have an analytical approach that differs from leisurely play (Mäyrä, 2008, p. 165). Frans Mäyrä (2008, pp. 165–166) makes a separation between structural gameplay analysis studying the core gameplay such as rules and interaction, and thematic analysis studying what he calls a shell, including the symbols and

messages of the game. Espen Aarseth (2003) approaches game analysis through different levels of play: superficial play, light play, partial completion, total completion, repeated play, expert play, and innovative play. From these types, partial completion reaches certain goals or sub-goals in the game, while total completion covers finishing the game.

Petri Lankoski and Staffan Björk (2015) have introduced a formal analysis of gameplay, in which the game elements and their interactions are closely examined. While Mäyrä (2008, p. 165) emphasizes understanding the context of gaming culture in research through play, Lankoski and Björk (2015) focus on the game in a more isolationist manner, disregarding the wider context. In the formal analysis, a game is understood through elements that form the game state, including components, player actions, and goals. They stress playing the game several times to build understanding and focusing on different aspects in different playthroughs.

Playing games is also a part of the heuristic evaluation of games in HCI studies. In developing and researching games, heuristic evaluation is seen to be a cost-effective, flexible method to identify playability problems (Paavilainen et al., 2018). In a heuristic evaluation, games are played in a systematic manner with a chosen list of heuristics as a guideline, recognizing playability problems and bugs, and assigning them a violated heuristic and a severity class. Heuristic evaluations can be used to improve game quality in different phases of the game-development cycle, but they can also be used to study published games to understand their nature and pinpoint typical problems, as carried out in Article II.

4.3 Data and methods

4.3.1 Article I

The views of the game industry are understudied in general, as well as in the field of free-to-play games (see Chapter 3). Article I approached industry professionals and helped give a voice to the creators of the games. The article discusses matters of the revenue model from the perspective of opinions, attitudes, fairness, and ethics, as these issues have been both at the center of the model and the criticism directed towards it. The interviews also included topics of the practices with which free-to-play games are or should be designed. These aspects were outside the scope of the

study reported in Article I, but Janne Paavilainen (2017) has touched on these issues based on the same dataset in his talk at the DiGRA 2017 conference.

In Article I, we interviewed fourteen game development professionals from six Finnish game companies covering mobile games, AAA games, and gambling games. The company representatives were asked to select the interviewees by themselves, each finding 2-3 people to take part in the study. The selected interviewees had a game industry experience of an average of nine years, varying from one to twenty years, and covered the roles of managers, developers, designers, artists, and analysts. Ten interviewees had experience in developing free-to-play games. In terms of some other demographic aspects, the group was less diverse, as all of them were Finnish males. This reflects the male-dominated game industry and the lack of diversity in the Finnish game industry – a situation that has since slowly improved (Neogames, 2019).

The interviews were semi-structured, thematic interviews, and were conducted in person at the company spaces of the interviewees. The interviews took 73 minutes on average, varying from 53 to 100 minutes, and covered various themes connected to the free-to-play model. Four of the authors, including myself, took part in conducting the interviews. The interviews were audio-recorded and transcribed prior to analysis.

Two researchers, including myself, analyzed the transcriptions following the thematic qualitative text analysis process described by Udo Kuckartz (2014). The process included multiple stages of coding rounds with the data. The first round quickly went through the data resulting in rough, major categories that were mostly present already in the data collection phase. In the second phase, these categories were used to code the data while the categories were further developed and differentiated. After this, a more elaborate set of sub-categories and codes were formed, and these were used to code the whole data in the third round of analysis. In Article I, we focused on four main themes: 1) attitudes towards free-to-play, 2) presumed player attitudes towards free-to-play, 3) ethics of free-to-play design, and 4) future of free-to-play games.

4.3.2 Article II

Article II included two inter-connected studies. In the first part, 18 novice inspectors evaluated a Facebook game, *Island God* (Digital Chocolate, 2010), with playability heuristics. The authors examined several heuristic sets, and chose the playability

heuristics from Korhonen and Koivisto (2006; 2007) as they cover usability, gameplay, and multiplayer aspects, and have been validated in previous studies. While the heuristics were not designed for social network games specifically, most of their design characteristics can be found in the heuristics and their descriptions. The mobility module from the original heuristic set was excluded as this was not applicable.

In the first part of the study, 18 novice inspectors were trained as a part of a university course in two 90-minute lectures on the heuristic evaluation method and two four-hour workshops conducting heuristic evaluation on website interfaces and games. In the second workshop, the inspectors used the same heuristics as featured in the study to evaluate a city management game. After the training, the inspectors evaluated *Island God* by playing the game for approximately two hours divided between several sessions over one week. The inspectors were instructed to write down when they encountered playability problems and assign each a violated heuristic. The first author organized and conducted the workshops, and I did not participate in them. The reports were then analyzed by three meta-evaluators, consisting of one method expert, one domain expert (myself), and one double expert. The meta-evaluators verified the problems by playing and studying the game and mutually agreeing on the violated heuristics. 169 reported issues were categorized, with 50 unique playability problems. Each of them was found and assigned one violated heuristic, showing that the heuristic set covers the design characteristics of social network games.

The second part of the study set out to confirm the findings about domain-specific problems in social network games. In this study, 58 novice inspectors each evaluated one of twelve pre-chosen Facebook games in a similar procedure as described in the first part of the study. The games represented various genres and themes and included both casual and mid-core games (see Table 9). Each game was evaluated by 4-6 inspectors. I was not personally involved in the workshops other than in the discussions of choosing some of the games in advance.

The inspectors found 797 playability issues that were then analyzed by the same three meta-evaluators as in the first part, and by a similar process. 614 issues were confirmed as playability problems, while 183 issues were categorized as false positives, software bugs, or errors caused by the platform. The playability problems were categorized, looking specifically at the domain-specific problems identified in the first study.

Table 9. Characteristics of the chosen Facebook games in the second part of the study in Article II

Game	Genre	Theme	Type	Perspective	Inspectors
A	Strategy	Turn-based warfare	Mid-core	Top-down	4
B	Action	RPG combat	Mid-core	Axonometric	5
C	Simulation	Castle building	Casual	Axonometric	4
D	Simulation	Life simulator	Casual	Axonometric	5
E	Action	Treasure hunting adventure	Casual	Axonometric	4
F	Match-three	Bubble shooter	Casual	Side	6
G	Action	Western RPG	Mid-core	Axonometric	6
H	Hidden object	Mystery puzzles	Casual	1st person	4
I	Action	Turn-based combat	Mid-core	Side	6
J	Trivia	Music quiz	Casual	Side	4
K	Strategy	Real-time warfare	Mid-core	Axonometric	4
L	Simulation	Well-being	Casual	Axonometric	6

4.3.3 Article III

Critical acclaim is considered to be one of the main predictors of profitability in the game industry. Game publishers can invest major resources in being visible and successful in game reviews. However, little evidence exists to show how ratings and profitability are connected, and even less so in connection to free-to-play games. Article III investigated the relationship between critical acclaim and commercial success in mobile free-to-play games via a mixed-method study.

Article III had two parts: quantitative and qualitative. For the quantitative part, we looked at the correlation of reviews and profitability. Two datasets were collected and combined in 2014. The first dataset was collected from Metacritic¹ and included every iOS game with a Metascore, totaling in 2596 games. The second dataset included the top 1000 iPad games according to the US top-grossing list from Sensor Tower². The datasets were combined, and games were divided into four different monetization models: free-to-play, free, paid, and paid with in-app purchases. This data was available only for the games included in the Sensor Tower data as Metacritic

¹ <https://www.metacritic.com/>

² <https://sensortower.com/>

did not provide the information. We used regression and correlation analyses to investigate the relationships between Metascore, grossing rank, and business model.

For the qualitative phase, we chose to examine five games with a high Metascore and five top-grossing games more closely by playing them analytically. We chose the games to represent various genres, and excluded games that included in-app purchases only in the form of an upgrade to a paid version, which would be categorized as demo games according to our definition. The final selection of games with their Metascores and grossing ranks are listed in Table 10. Our analysis was based on approaches suggested by Aarseth (2003), Mäyrä (2008), and Lankoski and Björk (2015) discussed in Chapter 4.2.3. Partial completion was a logical choice due to the free-to-play games being typically never-ending and frequently updated.

Table 10. Selected games and their information in Article III

	Game	Publisher	Published	Genre	Type	Metascore	Grossing
HIGH META-SCORE	Hearthstone: Heroes of Warcraft	Blizzard Entertainment, Inc.	2014	Card, strategy	Collectible Card Game	93	49
	Punch Quest	Rocketcat Games	2012	Action, arcade	Endless Runner	93	>1000
	Galaxy On Fire 2	FISHLABS	2010	Adventure, role-playing	Role-Playing Game	90	>1000
	Elf Defense Eng	Jellyoasis Inc.	2012	Board, strategy	Tower Defense	89	>1000
	Angry Birds Rio HD	Rovio Entertainment Ltd	2011	Arcade, puzzle	Physics Puzzle	88	332
TOP-GROSSING	Game of War - Fire Age	Machine Zone, Inc.	2013	Role-playing, strategy	Combat Builder	67	3
	The Simpsons: Tapped Out	Electronic Arts	2012	Adventure, simulation	City Building	69	7
	Clash of Clans	Supercell	2012	Action, strategy	Combat Builder	74	1
	Candy Crush Saga	King	2011	Arcade, puzzle	Match-Three	79	2
	Hay Day	Supercell	2012	Family, simulation	Farm Simulation	tbd	4

Mobile free-to-play games have characteristics that needed to be considered. Subsequently, we created a specific template to guide the analysis process. The template was based on game design literature (Fullerton et al., 2004; Schell, 2008; Fields & Cotton, 2012) and on free-to-play game studies that discussed the design of the games (Hamari & Lehdonvirta, 2010; Hamari & Järvinen, 2011; Paavilainen

et al., 2013). The template was tested in two rounds, both including several mobile free-to-play games, and was modified after each round.

The final template included eight categories: 1) first-time experience, 2) game mechanics, 3) audiovisuals, 4) narrative, 5) sociability, 6) monetization, 7) playability and bugs, and 8) returning to the game. Each of the categories had specific concentration points. In addition to the template, the researchers wrote notes in a simple gaming log while playing.

Two researchers, including myself, analyzed each of the chosen games. The high Metascore and top-grossing games were analyzed in turns in order to minimize the effect of time. A minimum of one hour was spent playing each of the games, and as much time as was seen necessary was used until all of the template areas were covered and the researcher was confident they understood how the game worked. Typically, this took anywhere from a couple of hours to a few weeks, with several play sessions during the timeframe. The data was further analyzed by the two researchers. The findings were discussed and compared, and when needed, relevant issues were given a more detailed inspection.

4.3.4 Article IV

While previous studies have widely studied purchase motivations, the research is typically concentrated on latent variables such as patience, enjoyment, or satisfaction as determinants of purchase behavior or purchase intention. The research has not focused on more concrete reasons that stem from how free-to-play games are designed. Article IV addresses this gap by studying players' reasoning to buy in-game content through a quantitative survey.

We composed a measurement instrument for identifying concrete reasons to purchase in-game content. To form a comprehensive list, we examined top-grossing free-to-play games, analyzing and listing in-app purchases and their in-game spending mechanics. We then triangulated the findings based on empirical knowledge on game content business, supported with previous discussions with game developers. The final list of 19 motivations were operationalized into an online survey. Respondents were instructed to rate how important the reasons had been when making in-app purchases on a 7-point Likert scale.

The survey was spread through the websites and social media pages of three major Finnish games-related magazines. During the 17 days the survey was active, 1159 participants completed the survey. For the purposes of this study, only the

respondents that had bought in-game content were included. This resulted in a sample of 519 respondents. The gender distribution of the data was biased with male respondents representing over 91% of the sample, while 95% were under 40 years of age. The 20- to 29-year-old age bracket was most heavily represented. The gender and age division most likely reflected the readership of the Finnish game magazine channels used for recruiting the respondents.

I was not involved in the data analysis process. The first author analyzed the data with an exploratory factor analysis to form the constructs. A multiple regression analysis was conducted to examine how the purchase motivation constructs were associated with the use of money in free-to-play games.

4.3.5 Article V

The free-to-play model has been criticized for being based towards a small portion of high-spenders paying the majority of the game's revenue. While many studies have focused on paying in free-to-play games with quantitative approaches, the paying players' opinions, experiences, and thoughts have not yet been widely studied, despite their crucial role in the model. Article V addressed this issue by interviewing paying players, focusing on high-spenders.

In Article V, we interviewed eleven players who had spent money on free-to-play games. We were able to choose our respondents from the larger survey data of 1159 respondents that was used in Article IV. We aimed to have variability in attitudes towards the free-to-play model. Attitude was measured in the survey with six claims with a seven-point Likert scale. The averages of the answers were calculated, and attitudes of the interviewee candidates were categorized into positive ($p < 3$), neutral ($3 \leq p \leq 5$), or negative ($p > 5$). Five of the interviewees had a positive attitude, four a neutral attitude, and two a negative attitude.

The survey data was skewed towards male respondents with no high-spending females available. Therefore, only one of the interviewees was female, while others were male. Eight of the interviewees were categorized as high-spenders, having spent at least €500 on free-to-play games, and three as medium-spenders for having spent €50-499. The information of the participants is listed in Table 11.

Table 11. Information of the interviewed players in Article V

ID	Gender	Age	Spending	Tried free-to-play games	Time/week on free-to-play	Favorite free-to-play game	Attitude
1	M	<25	High	11-15	15-20h	League of Legends	Neutral
2	M	<25	High	>50	5-10h	War Thunder	Positive
3	F	25-34	Medium	31-35	5-10h	Kim Kardashian: Hollywood	Positive
4	M	35-44	Medium	11-15	35-40h	Hearthstone	Negative
5	M	35-44	High	6-10	5-10h	World of Tanks	Neutral
6	M	<25	High	6-10	10-15h	CS:GO	Positive
7	M	<25	High	6-10	1-5h	Runescape	Positive
8	M	35-44	Medium	6-10	0	Mu Online	Neutral
9	M	25-34	High	1-5	1-5h	Word of Tanks	Positive
10	M	25-34	High	11-15	15-20h	Heroes and Generals	Neutral
11	M	35-44	High	1-5	0	Nothing	Negative

The interviews were semi-structured, thematic interviews, and were conducted as phone interviews in 2015, except for one interview that was conducted in person. The interviews took from 38 to 93 minutes each, with an average of 64 minutes. Four of the five authors conducted the interviews, including myself.

The interviews were analyzed by employing thematic analysis (Kuckartz, 2014) by myself and corresponded to the process used in Article I. Three analysis rounds were conducted, with first making observations and developing broad categories, then using those to code the data while elaborating the codes and creating sub-categories, and finally coding the whole data with this code set. We set to analyze the interviews from four main themes: 1) perceptions of free-to-play games, 2) experiencing free-to-play games, 3) using real money in free-to-play games, and 4) ethical issues in free-to-play games.

4.3.6 Article VI

When *Pokémon Go*, a location-based free-to-play game became a hit, we conducted a qualitative survey (N=2612) to uncover player experiences and opinions about the recently published game. We wanted to listen to the respondents' own narratives and meaning-making, and used open-ended questions focusing on experiences and reasoning related to *Pokémon Go*. This is an especially fruitful approach when studying new and emerging phenomena such as location-based gaming. The survey featured

closed-ended questions to reveal key demographics and playing habits. In Article VI, we focused on the three open-ended questions regarding starting, continuing, and stopping to play *Pokémon Go* (translated from Finnish):

1. Begin by explaining what made you start playing Pokémon GO.
2. What makes you continue playing Pokémon GO?
3. If you have stopped playing Pokémon GO, what made you quit?

The survey was developed and tested within an iterative process. During the development, 18 test respondents gave feedback on usability, flow, and other issues that might affect the respondent experience. We distributed the final survey in 15 Finnish *Pokémon Go* and related Facebook groups, and encouraged respondents to further share the survey. In addition, two Finnish gaming news portals advertised the survey. As an exploratory study, the respondent sample was not aimed to be representative of the whole player population, but it is important to note that the data collection method has a high probability to reach especially active players.

The survey was launched in September 2016, three months after the game itself was launched, and was online for a week, gathering a total of 2612 respondents after removing false or incomplete data. The large respondent pool and the nature of the open answers gave great insight into why people play the game. Table 12 shows the background information and playing habits of the respondents.

Table 12. Background information and playing habits of the participants in Article VI

Gender			Playing frequency		
Female	1628	62%	Several times a day	1394	53%
Male	927	36%	Once a day	483	19%
Other	57	2.2%	A few times a week	516	20%
Age			More rarely	100	3.8%
Under 18	147	5.6%	I don't play anymore	119	4.6%
18–24	721	28%	Used money		
25–34	1067	41%	Yes	939	36%
35–44	489	19%	No	1673	64%
45 or more	188	7.2%			

Of the 2612 respondents, 2595 gave at least one reason to start the game and 2049 at least one reason to continue playing it. Of the 119 respondents who had quit the game, 117 reported at least one reason why they had done so. The responses were

typically short, ranging from a single word to a couple of sentences. Many of the respondents gave more than one reason for each question.

We used applied thematic analysis (Guest et al., 2012) for the qualitative analysis, where the open-ended answers were coded by three researchers. For each of the three questions, a similar approach was implemented. Each researcher coded the data individually, creating and marking down codes and their descriptions. At the point of saturation, the codes were compared, and similar codes were merged. The results from the comparison and editing formed the codebook, which the researchers then used to code the rest of the data.

For the questions of beginning and continuing playing, the data was divided among the researchers. To confirm reliably, the researchers coded a same, selected sample of the data (N=100) separately twice during the process. We used Fleiss' kappa (Fleiss, 1971) to test the inter-rater reliability with the coded samples. Fleiss' kappa can be used when more than two researchers are analyzing the data. We reached substantial (at least 0.60) or excellent agreement (at least 0.80) in all of the measured categories and felt confident about continuing coding the data separately. After both test rounds, the resulting codes were also compared and discussed in a workshop. If the comparison caused changes in the codebook, any previous codes influenced by these changes were then corrected. This approach was used to make sure that the researchers shared a unified view and could analyze the majority of the data alone. Furthermore, the process helped to recognize challenging points, and allowed us to focus on them and make the process more reliable.

For the third question, due to the lower number of respondents who had quit the game and had given at least one reason why (N=117), each researcher coded all of the data. The three-step process of creating a codebook and comparing samples was implemented similarly as with the other two questions. However, the inter-rater reliability test was not used.

4.4 Summary

In this chapter, I have positioned and contextualized my work. I have located my studies in the field of game studies, drawing influence from social sciences, design research, and human-computer interaction. The focus of my research is on qualitative research, supported with quantitative and mixed methods approaches. Quantitative parts have been especially helpful in contextualizing my research, while the qualitative focus has been crucial in charting the significance of an emerging field

and hearing the voices of the players and makers. In the next chapter, I will combine the research from Articles I-VI and go through the main results related to each of the research questions.

5 RESULTS

In this chapter, I will introduce my main results for the research questions introduced in Chapter 1. The results from Articles I-VI are used and combined to answer each research question. First, I will use Articles I, III, and V to answer the question of the model's effects on game content, discussing the results from the perspective of game types and game mechanics. Second, I will use Articles I, II, III, and V to show problematic aspects connected to free-to-play games, covering the model's influence on attitudes, game experiences, fairness, and ethics. Finally, I will use Articles IV, V, and VI to answer the question of why players play and pay in free-to-play games. The purpose of this chapter is to show what kind of effects the free-to-play model has had on games, consumption, and playing.

5.1 Effects on the games

This subchapter uses the results of Articles I, III, and V to answer the first research question:

RQ1: How has the free-to-play model *affected game content*?

Effects on games were divided to two categories: *influence on the game type* and *influence on game mechanics*.

5.1.1 Influence on the game type

The free-to-play model has spread widely to cover various games, genres, and platforms. Still, there are some game types that seem to work especially well with the model, and this is seen in typical design features. Four design types are presented here, with an emphasis on *casual design*, *shallow narrative design*, *strong social design*, and *never-ending progression*.

Emphasis on casual design

As free-to-play games receive revenue from a minority of players, it is important that the audience of the game is as large as possible. Due to this, the games often follow casual design values (see Kultima, 2009), being easy to access and relatively simple, offering flexible playing styles and including widely accepted themes. Casual design is especially connected to mobile free-to-play games and social network games, while computer free-to-play games can differ in this aspect considerably.

The casual design can be seen in how the games are taught to the players. According to the results studying mobile free-to-play games in Article III, the initial experience can be very different depending on the type of the game, but the most similarities can be found among the top-grossing free-to-play games. These games taught the game mechanics in a restrictive way, making the player follow instructions with no control on what to do next. The actions done in these tutorials were very simple, sometimes focusing only on the one move the player could make, disabling other actions, or even blocking the visibility of the rest of the screen. These kinds of tutorials may feel frustrating to more advanced players but are helpful to newcomers.

While the tutorials teach the basic mechanics of the game, they also try to teach the player to use hard currency. In some cases, the player is forced to use a small amount of hard currency for instance to skip a short timer. This can be thought to lower the threshold of the next use of hard currency and might eventually lead to the use of real money.

Shallow narrative design

The nature of free-to-play games as never-ending experiences influence how the stories of the games can be built. The mobile games studied in Article III typically featured a background story or setting, but no deeper narrative structures. For instance, in *The Simpsons: Tapped Out* (EA Mobile, 2012), the player is rebuilding the city of Springfield after it has been accidentally blown up by Homer, linking the thematic story to *The Simpsons* animation series. This creates the setting and the reasoning for the game, explaining the destroyed blocks and the need to rebuild. Furthermore, the missions in the game draw their inspiration from the animation series, but do not tell full stories. This makes it easier for the game to expand and keep adding content frequently.

In Article V, this lack of deeper narratives was noted to influence the immersive experiences the games can offer. This is true not just with mobile free-to-play, but

also with computer free-to-play and even story-driven free-to-play games, such as *Star Trek Online* (Cryptic Studios, 2010):

Even though [Star Trek Online] is supposed to be a roleplaying game, the role-playing aspects are quite small. That *Witcher 3* [a non-free-to-play game] is kind of a completely story-driven single-player experience in which at least I get immersed completely. (Article V: paying player interview, ID 5)

Strong social design

Sociability is central in free-to-play games. In Article III, especially the top-grossing mobile games included a high number of social features. The more competitive games where players directly played against each other such as *Clash of Clans* and *Game of War - Fire Age*, were especially social. These games featured guilds, chats, and messaging systems, and allowed directly attacking other players and guilds. In the case of *Game of War - Fire Age*, the game supported stronger connections between guild members by allowing resource sharing and re-locating next to other guild members on the server map. In this way, the connections are not formed just through the communication channels of the game, but also concretely by sharing resources and sending troops to attack or defend other players, and uniting members against a common enemy.

In *Hearthstone* (Blizzard Entertainment, 2014), one of the central features of the game is matching the players against each other and advancing in ladders. The functionality of the matchmaker assures that the players get to play against others roughly on the same level as them, giving regular experiences of success even for less experienced players. While *Hearthstone* also includes single-player content, the multiplayer nature of the game with the regular addition of new card extensions make it easier not to run out of content.

Even games that do not feature direct competition include some social aspects. City and farm building games such as *The Simpsons: Tapped Out* and *Hay Day* allow visiting other players and helping them out, while *Candy Crush Saga* includes rankings and sending and receiving extra lives and moves from playing friends.

Social features were also seen as an important part of free-to-play games in the interviews in Article V. This is especially true for the more competitive, group-based games, and showed in the memorable experiences of the interviewees. When asked about the strongest positive or negative feelings while playing free-to-play games, players described situations connected to playing with or against other people, with alternating feelings of frustration and achievement.

Never-ending progression

As free-to-play games continue to receive revenue while the players continue playing and paying, it is important that playable content never ends as long as the game continues to be profitable. More content is added constantly, and the speed of progression is limited.

The feel of progression was at the center of the top-grossing games in Article III, but could vary between games. For instance, *The Simpsons: Tapped Out* progressed slowly, allowing only a few actions in a relatively long time and thus keeping the sessions short, while *Game of War - Fire Age* included a lot of smaller upgrades and actions with short timers, making the sessions longer or more frequent and the feel of progression faster. The city and farm building games included simple quests or missions to guide the progress. These types of activities give the player a lot to do, but can cause the game to be repetitive as described in Chapter 5.2.2.

In puzzle games such as *Candy Crush Saga*, the approach leans into solving an ever-increasing amount of puzzle levels. The progression is slowed by adding more challenging levels and a life mechanic, which is depleted when the player fails. As there can only be a limited amount of levels, this type of game can more easily temporarily end for a player if they finish all the levels before the developer implements new ones. The number of levels is typically high and actively updated, and reaching this state requires constant active playing. Possibilities for additional progression are given by high score lists, and levels can be replayed with this additional motivation.

In competitive games such as *Hearthstone*, the continued progression is against other players, and never ends as long as there are other players to compete with. Progression in *Hearthstone* is also about collecting cards and building decks. The game offers a starter set of cards, and the player can acquire more cards by playing or buying them with in-game currency or money. *Hearthstone* includes a meta-level of play, as players actively create and share decks that best work at any given moment. New generations of cards are brought into the game periodically in order to keep this meta-game ongoing.

According to Article V, the never-ending nature of the games has an effect on the feelings of achievement. As the games never finish, the ultimate feeling of accomplishment similar to some one-time payment games does not happen. However, these games do offer several smaller, although not as memorable, feelings of achievement.

5.1.2 Influence on gameplay mechanics

The free-to-play model influences game mechanics. While there are a wide variety of mechanics among the various types of games under the free-to-play umbrella, four approaches arose from the results that seem especially tied to the model and are used widely between game types: *advantage with money*, *currency management*, *patience mechanics and sessioning*, and *timed quests and rewards*. There are also other mechanics that can be more frequently used in free-to-play games, such as collecting and improving high scores. These mechanics are connected to the never-ending progression of the games, discussed more under Chapter 5.1.1.

Advantage with money

As a part of the definition of free-to-play games, they include in-app purchases which offer advantages for the player. These advantages can be bought with money or hard currency. In some cases, the player can also watch an advertisement or connect with playing or non-playing friends, so boosting the virality of the game. The social sharing aspect was especially important during the time of social network games, as the games acquired a significant part of their audience through virality. Some of the mobile free-to-play games in Article III still included some of these social mechanics, albeit on a smaller scale.

The gained advantage can be cosmetic, which can change or add audiovisual items or elements, or functional, which can give gameplay benefits, allow faster advancement, or make playing easier. In addition, some paid content has social elements, for instance sharing the benefits or increasing the possibilities to communicate with others. The player can then choose whether to pay for these advantages. Different types of in-app purchases are described in more detail in Chapter 2.2, while Chapter 5.3.3. lists concrete reasons to buy these advantages.

There are great differences between game types in how they utilize paid content. The mobile games in Article III sold functional content, including faster advancement and power purchases, while many competitive computer games might exclude power items and focus more on selling cosmetic content and unlocking content faster without grinding.

Currency management

In-game currencies are important in most free-to-play games. In-game currencies are often used to offer in-app purchases without directly using real money. In these cases, if the player wants to acquire a certain item and does not have enough in-game currency, the currency must be bought or earned first.

There are different ways to implement in-game currency models. In Article III, all of the top-grossing games included a double-currency model. In this model, the game includes a soft currency that is less valuable and can typically be earned relatively easily through playing, and a more valuable hard currency, which can be earned only in small amounts or not at all through playing. Sometimes the in-game currencies are further divided into several hard or soft currencies, such as in *Game of War - Fire Age*, which includes several soft currencies with different values and purposes.

Interestingly, the games with a high Metascore in Article III had only one currency, and in most cases this currency could be earned in abundance within the game, resembling a soft currency, but could also be bought with real money. *Hearthstone* was an exception, and here the single currency resembled hard currency and could be slowly earned through playing, but it could not be bought with real money. However, anything that could be bought with the currency could also be bought directly with real money. Excluding *Hearthstone*, this means that in the high Metascore games, the player could more easily open all of the content through playing instead of paying, decreasing the pressure to pay real money on the games. This might be one of the underlying reasons for these games to be reviewed highly by the press, and not succeeding as well commercially as the top-grossing games.

When purchases are made with an in-game currency and when that currency can be earned through gameplay, it means that there are no exclusive purchases that can be made only with real money. The game can reward the player by giving some hard currency, and the player can then choose how to use it. In reality, if receiving in-game currency is scarce, this might be only theoretical for the more expensive in-app purchases. As an additional observation, games can also include purchases that are exclusive to paying players. In Article III, these games were all in the high Metascore category, and were single purchases of permanent benefit, such as permanently increasing gained rewards or the ability to skip levels.

While the currency system can blur purchase decisions, the advantage for the player is that they can buy and store currency when they can afford it, and choose

the amount of money they use more freely. The purchased currency can then also function as a means for self-regulation.

Patience mechanics and sessioning

Patience mechanics and sessioning are especially relevant for mobile and social network free-to-play games. Multiple games in the top-grossing group in Article III included simple mechanics, which would be activated by clicking or tapping different active spots on the screen. A click would typically trigger a timer and result in rewards after completion, creating a waiting mechanic. Completing a timer would then allow the next task in line to be started. In some games, multiple timers could be run at the same time, but advancing was somehow limited. One way to control this are energy mechanics, where each action costs a certain amount of energy. New activities can be started until the energy is depleted, after which the player must wait for the energy to refill or use hard currency to instantly refill the bar. Both the timers and the energy refill counters run even when the player is not playing, making them *offline progress mechanics*.

These simple mechanics are repeated, linked, and cycled, forming the core loops of the games. These games tend to lack in mechanical difficulty, making the challenge of the game more about patience and slower progression, which could be accelerated with hard currency and eventually with real money. The depletion of possible actions inside the game defines the play sessions: the player can play for a certain time for free, and after that the session ends and the player either stops playing or spends money or hard currency to continue. The length of the sessions depends on the game. In the top-grossing games, the offline waiting times sometimes grew considerably long already in the early stages of the game. For instance, in *The Simpsons: Tapped Out*, the longest waiting times in the beginning of the game were 24 hours, and the play sessions were very short if hard currency was not used.

While patience mechanics and sessioning function as a way to monetize games, they also function as a limitation on how fast the content can be played through. As competitive games such as *Hearthstone* and many other computer free-to-play games depend on other players for providing virtually unlimited content, they often allow limitless playtime and rarely implement sessioning.

Timed quests and rewards

Free-to-play games often include some kinds of timed quests and rewards, in order to keep the player coming back frequently and play actively. Timed quests and rewards are used widely in different types of free-to-play games, including mobile games, competitive computer games, and MMO games.

Daily quests are limited missions that give better rewards than the rest of the activities, and work as retention mechanics. In Article V, participants explained how these quests make them visit the game daily; even when there was no time or motivation to play the game, the daily quests could still be completed. In Article III, for instance *Hearthstone* also includes periodic tournaments when playing actively is needed to be successful. This is typical in directly competitive games.

Timed rewards work in a similar way, but do not require anything else than logging into the game and claiming the reward. A typical way to implement this is to offer daily rewards and keep offering better rewards for claiming several daily rewards in a row. In some cases, the timer can be shorter or longer, and one game can include several types of timed rewards. If the player misses a day, some games offer a possibility to spend money or hard currency to claim the reward after the deadline and continue the streak.

5.2 Problematic aspects

This subchapter uses articles I, II, III, and V to answer the second research question:

RQ2: What *problematic aspects* are connected to the free-to-play model?

The problematic aspects are divided into four levels: influence on *attitudes*, *game experience*, *fairness* in and of the games, and *ethical concerns*.

5.2.1 Influence on attitudes

Free-to-play games have been the target of negative attitudes that were recognizable in the interview studies in Articles I and V. These negative attitudes are divided to two categories: *negative reputation* of the model and *sub-par games*.

Negative reputation

Free-to-play games have had a negative reputation among players, press, and game developers alike. In Article I, the professionals explained that player attitudes towards the model and games were even unfairly negative, with players condemning all free-to-play games due to their revenue model. The opposition to change, the history of aggressive and shallow games, as well as the amount of poorly designed games still around were suspected as being some of the reasons for the negativity.

In Article V, nine out of eleven players estimated that the general attitudes towards the free-to-play model were more negative than their own. Attitudes towards the games were not always seen to be based on facts, as there are many misconceptions related to the model.

While the industry professionals in Article I saw the free-to-play model mostly in a positive light, less enthusiastic attitudes can be seen in the comments that phrase the model as a “necessary evil”. When the game companies cannot make choices freely but must adhere to the markets and feel pressured to choose a specific revenue model to have increased chances for profitability, it may decrease their motivation and increase the negative attitudes towards the model.

Sub-par games

In Article V, the players divided free-to-play games and other digital games into clearly separate categories that they did not treat equally. Free-to-play games were downplayed by stating that not that much could be expected from a free game, while one-time payment games were sometimes referred to as “proper games”.

In Article I, the game industry professionals had noticed differences in attitudes between game types. The less casual free-to-play games such as *Team Fortress 2*, *League of Legends*, and *World of Tanks* seemed to receive much less backlash, however, the interviewees had no clear answer as to why it was so. Similar opinions were seen in Article V, where some interviewees saw mobile free-to-play games and computer free-to-play games as their separate worlds. Mobile free-to-play games were seen as less worthy and were claimed to include negative aspects of the model more frequently.

The evaluation of free-to-play games can also be seen in article III. Mobile free-to-play games received lower critic scores compared to mobile games with other revenue models, but dominated the grossing list. Unlike for instance console (Greenwood-Ericksen et al., 2013) and Steam games (Orland, 2014), with mobile free-

to-play games, the review scores did not correlate with commercial success. It therefore seems that game journalists do not appreciate mobile free-to-play games, and while games might thrive economically, their success is not reflected in game reviews.

5.2.2 Influence on game experience

According to the interviews in Article I and Article V, the effects on game experiences are an acknowledged problem in the free-to-play model, but the problem was not seen as overarching. On the positive side, when the player keeps on making purchase decisions during their entire playing career, the game developer has a higher incentive to keep improving the game. However, there are typical problems with the model that have a negative effect on the game experience: namely *boring and repetitive gameplay*, *artificial hindrances and paywalls*, *interruptions and spamming*, *aggressive monetization*, and *toxicity and cheating*.

Boring or repetitive gameplay

In Article II, where social network games were evaluated with heuristics, boring gameplay, where similar tasks and quests were constantly repeated, was the most commonly found playability problem. Connected to this, a “click fatigue” problem was related to the typical gameplay mechanic in social network games, especially simulation and strategy games. Players would need to interact and tend the game world by clicking items numerous times. This problem increased as the games advanced, as there was more content to take care of. Continued clicking was seen as tedious, frustrating, and unrewarding. Repetitive gameplay was also noticed in Article III, where when analyzing mobile free-to-play games, the main gameplay of some of the games could include a lot of simple and repeated tapping to start or finish tasks. The boring or repetitive gameplay problem seems to be an issue especially in mobile and social network games, but less so with competitive computer games or MMO games.

Artificial hindrances and paywalls

Free-to-play games use artificial hindrances in an attempt to monetize players. Hindrances can include patience mechanics and sessioning mentioned in Chapter

5.1.2 or they can try to make playing the game tedious without money. If these hindrances are too cumbersome or stop playing altogether if money is not used, they are seen as paywalls. While some hindrances are tolerated, paywalls were considered as especially negative in both Article I and Article V. While any game type can include artificial hindrances, they are more common in social network and mobile free-to-play games.

Interruptions and spamming

Especially when games were thriving on social network services, they included interruptive popups and spamming of advertisements and game events. These games could typically include multiple pop-ups during a single game session, connected to different events and updates in the game, as well as advertisements to buy in-game content and encouragements to share game events on social media. As these pop-ups must be addressed before continuing gameplay, they stop the flow of the game. Players can post on the social network service about different game achievements and events, filling the social feed, but this can be considered as intrusive. These problems were evident in the social network games studied in Article II.

In the mobile free-to-play games studied in Article III, the interruptions often came in the form of advertisements that must be watched in order to continue playing, causing a similar type of disturbance in the gameplay. However, these typically last longer than a simple pop-up. Mobile games' connections to social network services, especially Facebook, still exist in some mobile games, allowing and encouraging posting on the social network service.

Aggressive monetization

Aggressive monetization can mean trying to sell as much in-game content as possible, by putting a price tag on as many features as possible and advertising the paid content aggressively. In Article III, some of the top-grossing games were experienced as somewhat aggressive. For instance, in *The Simpsons: Tapped Out* this emerged through frequent advertisements of limited-time purchases, while *Game of War - Fire Age* crammed the user interface with offers and monetized content as much as possible, including asking for a payment for renaming the player character or their city.

Aggressive monetization can also include the paywalls and interruptions mentioned previously, and in general sacrificing the game quality over maximizing revenue. Aggressive monetization was considered as a negative feature of free-to-play games by interviewees in both Articles I and V, although were not seen as a part of all of the games and was sometimes seen as a sign of a shady company. Aggressive monetization was also identified as a problem when evaluating social network games in Article II.

While generally against aggressive monetization, one interviewee in Article I noted that aggressiveness seemed to be working at the time of the interviews, so it might be ill-advised to reject it completely. That said, the worst time for aggressive monetization seems to have already passed, and according to the game professionals featured in Article I, free-to-play games had already taken a less aggressive direction. This change was further visible in Article V, where several respondents mentioned past experiences with aggressive games, while currently played games felt much better in this regard.

Toxicity and cheating

Free-to-play games have a strong social design, yet it can also lead to typical problems in the model. In Article V, toxic behavior in the communication channels, ranting, hacking, use of bots, or just unequal skill levels were all mentioned as causing negative moments that stood out from the game experiences. The community could be so toxic that it could be a reason to quit the game. It was also pointed out that as free games, they attract a different kind of audience and commitment from the said audience than games that have a purchase price or a monthly fee, and this could make the games more toxic. Some of the games in Article III tried to avoid the toxicity by restricting the ways players could communicate with each other.

The inequality between paying and non-paying players divided players into groups and created tension between them. This in turn sometimes erupted into aggression. In Article V, players described how paying players could act as being better and mocked others after winning, while non-paying players called out players using money and treated them with disrespect.

5.2.3 Influence on fairness

Especially due to the differences in the amounts of money players spend on free-to-play games, the revenue model can be seen as fairer or unfairer to certain players, depending from their perspective. Using money in a game creates *unequal opportunities* between players, and the games are often *dependent on high-spenders*. But on the other hand, *paying is voluntary and flexible*, so creating democratic and fair opportunities for players in different situations.

Unequal opportunities

Both the game professionals in Article I and players in Article V directed one of the biggest criticisms of the model towards pay-to-win. As explained in Chapter 2, pay-to-win means that players using more money gain an advantage over other players. This was seen as a problem, especially when the game included direct competition between players. In Article V, the interviewees felt that non-paying players should have a fair chance against paying players. However, drawing the line was not easy. Some games offered benefits with money, but the game or matches in it could not be won only with money. Whether these games were considered as pay-to-win or whether this was negative to begin with was not self-evident.

Dependence on high-spenders

A game depending on a small number of high-spenders was seen as problematic in Article I. It was mentioned that optimally, the portion of paying players would be bigger, and everyone could pay less. However, one of the industry professionals explained how in the model only a small portion of players pay money, and getting enough revenue from the high-spending minority is necessary to make the game profitable.

In Article V, it was noted that some people have to pay in order for the games to function and the developers to make a living. Interestingly, some players playing for free while a small portion paid on their behalf did not arise as a fairness issue, even when interviewing paying players. Being able to play for free seems to be tightly interwoven with the model, and can be a more respected way of playing rather than paying for the game.

Paying is voluntary and flexible

It is worth mentioning that free-to-play model can also be seen as fair. The absence of a purchase price was seen as the clearest benefit of the model in both Article I and Article V, allowing players to play games before committing and paying. This would allow the games to be made available for larger groups of people.

Paying was described as both voluntary and flexible, meaning the player could decide whether to pay at all, and if they did pay, the amount of money they would spend on the games could be chosen as well. This was seen as a great advantage compared to the one-time payment model, where the player has to pay a fixed price before gaining access to the game.

5.2.4 Ethical concerns

Neither the professionals in Article I nor players in Article V saw the free-to-play model as unethical by default, but believed that individual games and game companies could act unethically, and that the model drew all kinds of actors. However, the free-to-play model does seem to have some typical ethical problems, mainly connected to *privacy, false advertising and misleading, addiction, gambling, and under-aged players*.

Privacy concerns

As many of the free-to-play games save a variety of data from their players, there are privacy concerns related to these games. In Article V, it was seen as unethical if the game required a wide range of access permissions to allow playing. Some of the games would even request or require a permission to post on social media on behalf of the player. The game might then spam on social media even without the player's knowledge.

That social spamming in social media, how it takes advantage of the players to spread itself like a virus and advertise itself. I think these aspects in games are ethically very wrong. So to play the game, give us a permission to everything. (Article V: paying player interview, ID 4)

False advertising and misleading

If a game was marketed as free and then included strict paywalls that stop or severely obstruct playing without money, it was seen as false advertising and misleading the player, as described in the Article I interviews. In worst cases, a game could try to pressure the player into paying, or even try to get the player to pay by accident.

A responsible way to solve this would be making it evident that the game includes voluntary in-app purchases. The player should always know when they are paying and what they are paying for. This kind of transparency was seen as important in both Article I and Article V. Some good examples of this were seen in Article III. In *Clash of Clans*, the game made it clear in the beginning that it included in-app purchases, and in *Hay Day* hard currency purchases required a double click, making sure the player would not make them unintentionally.

Addiction

The addictive quality of the games was seen as conflicting. As addictive gameplay in the general language is often used as a synonym to the game being highly engaging, it was sometimes seen as a positive quality in Article I. However, using people's addictive tendencies was seen as unethical. Especially, getting players addicted first and then asking money to continue was even compared to drug dealing by one interviewee in Article V.

High-spenders can spend thousands, even tens of thousands of euros on a single game. In Article I, the amount of money was not seen as problematic from the subjective situation of the person spending the money. A player spending more than they could afford due to them being addicted was considered as problematic, while for some, the same amount of money could be affordable.

When a player uses tens of thousands of euros in a game, it sounds to me quite odd and unethical, but you have to see it from that person's point of view. Maybe it's nothing to them, everything is relative. In my opinion, the ethical question lies in the situation where someone who has a tendency for gambling is used against their will because they have this tendency. (Article I: industry professional interview, company game type: AAA, role: business development manager, free-to-play development experience: yes)

Even though addiction was an acknowledged problem and taking advantage of addictive tendencies was considered unethical, it was typically seen as the player's

responsibility to control their own time and spending in both Article I and Article V interviews.

Resemblance to gambling

One of the controversial aspects of free-to-play games is whether they are able to be seen as gambling or not. Some of the interviewees in Article I worked with money games and gambling, and due to how gambling is regulated by authorities in Finland, did not see their work as problematic or unethical. As the regulations were explicit and came from outside, it was seen as enough to follow these rules.

As free-to-play games did not officially fall into the gambling games categories, they did not have similar restrictions and regulations, yet they shared similarities with gambling. Both in Article I and Article V, some interviewees suggested customizable limitations for free-to-play games familiar from gambling games. With these, problematic playing and the use of money could be monitored and limited by players themselves.

Under-aged players

The combination of children and free-to-play was seen as ethically problematic in both Article I and Article V. As the concept of money might not yet be clear, marketing in-app purchases to children is especially controversial. Children accidentally spending large amounts of money without their parents' knowledge had been in the media headlines relatively frequently, and was a regularly mentioned issue in the interviews as well. In both Article I and Article V, the parents' responsibility to follow their children's activities and especially in keeping passwords safe was called for.

Some solutions were also discussed in Article I. It was mentioned that some games are clearly marketed to adults, and the game can have age restrictions in their user conditions. In-app purchases can be prevented from the settings, and some games remind players of this possibility, while some games ask players to re-enter the password in the case of repeated in-app purchases.

5.3 Motivation to play and pay

This subchapter uses articles IV, V, and VI to answer the third research question:

RQ3: *Why* do people a) *play* free-to-play games and b) *pay* in them?

This question is answered from three perspectives: why players *start or continue* a free-to-play game, how *paying has normalized* in free-to-play games, and what are the *concrete purchase reasons*.

5.3.1 Playing free-to-play games

Starting a new free-to-play game is easier compared to games with other models due to the lack of a starting price. The reasons to *start a game* were discussed in Article V, while Article VI categorized the reasons to start and continue playing *Pokémon Go*. The low threshold to try games makes transporting to other games easy as well. Free-to-play games need to grasp the player's attention right at the beginning of the game, and try to *engage the player*, giving an incentive to continue playing. In Article V, players discussed staying in a game *out of habit*.

Starting to play a game

In Article V, players described reasons to choose free-to-play games that were similar to the reasons games are typically chosen in general. These included visibility in the media, popularity or hype, reviews, top charts, friend recommendations, screenshots, and videos. In addition, social reasons may play a more crucial part in free-to-play games, where the game could be chosen due to it already being played by friends. The game company's reputation or the game's visibility in the esports scene were also mentioned as influences.

The case study of *Pokémon Go* in Article VI shows more detailed reasons to start playing a free-to-play game. *Pokémon Go* is based on a strong brand, and this was visible in the results as well. Previous experiences were the biggest reason to start playing *Pokémon Go*, and from these, experiences with the brand were most frequent. This shows how important the brand can be in a free-to-play game. In addition, the social influence of others playing the game and the game's popularity and hype were major reasons to try the game.

Other reasons were general interest, positivity, technology, situation, keeping up, social features, mechanics, and the nature of the game. Interestingly, the game being free was not a major reported reason to start the game. This most likely tells a lot about the popularity of the model and of an assumption of this type of game being free, and so not even worth mentioning. It is also worth noting that the reported reasons were not associated with how much the players then played the game, suggesting that the reason to start has little effect on how the game is played.

Getting engaged

In Article V, the interviewees explained that it is quick to see whether a free-to-play game is worth playing, and games giving negative first impressions were not continued. Interviewees described that to keep the player interested, the game should offer enough content, a good sense of progression, and opportunities for exploration. This phase of the game was described as exciting.

After staying over the most crucial onboarding phase and becoming more familiar with the game, the game starts to slowly find its place in the player's daily routines or they start losing interest, according to the player interviews in Article V. Sometimes there was a specific point when a player had noticed their excitement fading, for instance after achieving a long-time goal:

Probably at the point when I got the first tier 10 tank [in *World of Tanks*], I felt a bit like, well, now I have it in my garage. After that, it started to fade a bit, the excitement from the game. (Article V: paying player interview, ID 5)

The game could try to keep the player coming back with different retention mechanics. One concrete way to do this are push notifications, which appear on the screen of the device when the game is not running and keep reminding the player about the game. In the games examined in Article III, all of the top-grossing games used this feature, while none of the high Metascore games did. Another way to keep the interest going is having new content to play, and was expected by the players interviewed in Article V.

In the case of *Pokémon Go*, the participants mentioned reasons to continue playing connected to progression, situation, positivity, game mechanics, social features, social influence, interest, expectations, nature of the game, previous experiences, keeping up, and technology. Progression was clearly the most frequently reported reason, further stressing its importance in free-to-play games.

Unlike the starting reasons, the reasons to continue playing *Pokémon Go* were connected with the playing frequency. Progression, situation, positive aspects, mechanics, interest, and expectations were positively and statistically significantly associated with playing frequency, whereas technology was negatively associated. This might indicate that the novelty of a technology can wear off quickly.

Staying out of habit

The Article V interviews show that contrary to the starting phase, leaving the game after a longer playing career was not easy. Sometimes the interviewees continued playing the game long after their motivation had decreased and the game had started to feel boring.

Two main reasons arose for continuing playing at this point: either the player had already invested in the game or had social motivations to continue. Investments could mean time and effort, money, or gained skills that could not be transported into a new game. Social motivations could include a community that was hard to leave behind, or friends still playing the game with whom the interviewee wanted to spend time. Free-to-play games can also build the social aspects of the game to support commitment and returning to the game, and both casual and hardcore free-to-play games can use these features. From the studied games in Article III, this was especially evident in *Game of War - Fire Age*, where the strong sociability and commitment to the guild was seen as a motivation to keep coming back.

5.3.2 Paying in free-to-play

According to the player interviews in Article V, paying in free-to-play games has become a normal activity to many. Even larger sums were seen as reasonable if the game offered value for that money. Paying in free-to-play differed from buying one-time payment games in being more spontaneous. *Willingness to pay*, *ease of purchase*, *comparison to other hobbies*, content being *worth the money*, and *supporting game companies* were among the typical reasons for this normalization and spending of money.

Willingness to pay

The interviewed players in Article V were spending money willingly and happily, and expected and wanted the games to sell in-game items. A good game was described having a nice selection of sold items, a well-organized store, and would make the player want to spend some money. One interviewee saw trading systems between players as an under-utilized feature and wished more systems like Steam's marketplace would be introduced to support trading.

Ease of purchase

According to the interviews in Article V, easier purchase processes have increased the willingness to pay in free-to-play games. The payment processes were described to be much easier from what they had been previously, and this was mentioned as a reason for the impulsiveness of the purchases. The ease of purchase could be a drawback as well, as it might lead to spontaneous purchases that might be regretted later. It was admitted in some interviews that the temptation to buy new items sometimes got quite high, and some restriction was needed. Sometimes the temptation grew too high to be resisted.

But when a certain thing is desired for a couple of days, you think about it and look at it, the need to get it becomes compelling. It's a bit hard to restrain it then. I kinda have to get it if that hits. Otherwise, I'd have to take my credit card info away and give the card to the missus and ask not to tell me the number. They become compulsions of sorts. (Article V: paying player interview, ID 10)

Comparison to other hobbies

Spending money on free-to-play games was compared to any other hobby both in Article I and Article V, and it could function as a personal reward. Paying in a free-to-play game was compared to a night at a bar with friends or buying a bag of candy from the store. Even high amounts of money could be justified this way, as hobbies often cost and are still seen as reasonable and worth the money. If the money made the experience better in an already good game, then spending money was considered as unproblematic. Sometimes spending money was even seen as an exciting vice, but even in this case, the overall experience was described as being positive:

Usually [I pay money] in the evening when the children are sleeping and the wife is on the laptop or maybe watching the television. It's like going for a cigarette as a

young kid, that kind of feeling. It has its own charm, I can't explain it, I'm sort of addicted to it. (Article V: paying player interview, ID 10)

Content that is worth money

Interviewees in Article V explained analyzing whether spending money was worth it. This could be done on a general level by calculating the price for the time played, and was also another way to justify higher amounts of money being spent.

If you'd think it so that you have played about three thousand matches, and one match takes about, if you round it down [...], it's maybe 20 minutes. Then you start to think how many hours it is and start to divide that 600 euros. Then you think that, well, 50 cents an hour or 40 cents an hour. It doesn't feel bad. (Article V: paying player interview: ID 1)

Similar reasoning happened on the level of single purchases, and there might be some careful calculation before the purchase to determine whether it would be sensible to spend money or not. If for instance a purchase could help skip a lot of grinding, it was considered reasonable. But while some purchases were considered carefully, others might be spontaneous.

The content type had a major influence both on spending money on the content and on the attitudes towards paying. The clearest distinction was made between functional and cosmetic content. While functional content was somewhat disapproved of as it could affect the game balance, advancing faster was still the biggest reason to spend money in the games. With this, players could skip boring content or advance to the next phase of the game.

I would say that mostly I put money in it a bit before the endgame so that I feel that I've already got a lot done, and now I would like to get [...] all these elements open so I can see what the endgame is. (Article V: paying player interview, ID 3)

Periodic fees such as monthly subscriptions offered several advantages and were seen as worth the money in some games, such as *World of Tanks*, in which the subscription fee gave, for instance, more in-game currency and experience points, making advancing in the game faster and easier.

The cosmetic content was least conflicting and for this reason more acceptable, but not always as valued. Some described it as “needless junk”, while others felt especially rare items with a distinct appearance earned recognition, or even made the player feel like they owned a part of the game. The division of functional and

cosmetic content is not always clear, as some powerful items can have a distinct appearance, combining the benefits of power and recognition.

Whether the money spent offered a temporary boost or permanent value was also influential. For instance, the expansions in *Hearthstone* or premium tanks in *World of Tanks* were seen as good investments, as they could be enjoyed repeatedly.

There were also different functions for the content in different games. In some games cosmetic items could feel positive, while in others it would be more important to advance faster.

In League of Legends and in CS:GO they bring a certain kind of positive atmosphere, and in *Hearthstone* they are a possibility to advance. (Article V: paying player interview, ID 7)

Supporting game companies

According to Article V, the game company matters when spending money, and could be one of the motivations to pay. Some might want to support smaller or local companies, while others want to give money to “the good guys” or companies and games that shared their values. On the other hand, if the company might feel shady and there were no guarantees where the money was going, players felt more reluctant to pay. Similarly, if the game was especially good and fair or the player was spending a lot of time on it, then money could be paid just to reward the developers or publishers and help secure the game’s future.

If you use 6-16 hours per day on a game, you do want to help the publisher so you can do that in the future, too. (Article V: paying player interview, ID 6)

5.3.3 Concrete reasons to pay

In Article IV, we examined and factorized concrete reasons for players to pay in free-to-play games. From the list of reasons to buy in-game content, most important were unlocking content, supporting a good game, reasonable pricing, special offers, and investing in a hobby. The degree of importance was measured on a 7-point Likert scale.

The purchasing reasons were converged into six dimensions through a factor analysis: 1) *Unobstructed play*, 2) *Social interaction*, 3) *Competition*, 4) *Economic rationale*, 5) *Indulging the children*, and 6) *Unlocking content*. Indulging the children formed a factor

on its own, while unlocking content ended up being too wide a category to be connected with other reasons.

Unobstructed play

Unobstructed play includes motivations to continue playing without waiting, hindrances, boring parts of the gameplay, or losing content. Here, the player wants to skip the artificial hindrances that have been designed exactly for this purpose. This factor included the following individual motivations:

- *Speeding timers:* Especially common in farm and city building games, where completing tasks and buildings takes a specific time that can be immediately completed or sped up by paying.
- *Avoiding repetition:* In some games, it is possible to skip repetitive content such as grinding by paying.
- *Reaching completion:* Sometimes money can be used to complete tasks and levels which might feel time-consuming or otherwise difficult.
- *Continuing play:* Games that use sessioned play offer the possibility to continue the sessions beyond the allocated time limit with spending money.
- *Protecting achievements:* Sometimes, achieved items, goals, and achievements can degrade or disappear, and can be protected with spending money.

Social interaction

As discussed earlier, social aspects are crucial in free-to-play games, and are also important in motivating players to spend money. Players might want to socialize, customize their visuals for others to see, help or protect friends, or participate in events with others. The individual motivations are thus:

- *Playing with friends:* Some games can monetize adding friends or using features that help connecting and playing with friends.
- *Personalization:* Customizing in-game content such as avatars or items helps to differentiate players from others.
- *Giving gifts:* Many free-to-play games allow sending gifts to friends, and in some cases these gifts can be bought with money.

- *Avoiding spam:* Some free-to-play games give advantages from sending messages or calls for help to friends. Sometimes players rather pay than spam their friends.
- *Participating in a special event:* Games often add special, limited-time events. To gain all the unique or rare content from the events, players might have to spend money.

Competition

Also connected to the social nature of free-to-play games, competition is a common element. This can be monetized by giving a competitive advantage for players wanting to be better than others, or by showing off their achievements in the game. The motivations connected to this factor are:

- *Showing off achievements:* Player receive achievements such as trophies, badges, and other items, that can be visible to other players. Being able to show these can be a motivation to pay money.
- *Showing off to friends:* Showing achievements, wins, and progress in the game to friends can be a motivation to pay money.
- *Becoming the best:* Many in-app purchases give an advantage over other players, helping them to become better compared to others.

Economic rationale

Concrete motivations connected with spending money often include economic reasoning. This can be connected to prices and discounts, as well as rationalizing the spending by supporting a good game or company, or by investing in a hobby:

- *Reasonable pricing:* Players can be motivated to purchase in-game content if the prices are cheap enough.
- *Supporting a good game:* Players might want to support a good game or a company by paying money and trying to ensure the game's continuance.
- *Special offer:* Players can purchase in-game content when offered sales or special deals, especially if they are of limited quantity or available for a limited amount of time.
- *Investing in a hobby:* Playing is a hobby that is worth the financial investment.

Indulging the children

Indulging the children formed a factor by itself, and is connected to parents and others who play the games with children:

- *Indulging the children:* When games are played with or by young children, parents or guardians can make purchases for them. While children have their own motivations for gaining the content, the parents or guardians control the use of money.

Unlocking content

Unlocking content was a larger, single motivation that can include several types of purchase motivations:

- *Unlocking content:* The game can offer more content to play with the use of money, such as additional maps and levels.

Article IV further investigated how these purchase motivations were associated with how much money players use on in-game content. From the motivations, unobstructed play, social interaction, and economic rationale were positively associated with money spent on in-game content, while competition, indulging the children, and unlocking content were not significantly associated.

5.4 Summary

In this chapter, I have introduced my main results considering my research questions. The results explain what kind of effects the revenue model has had on free-to-play games, what are the problematic issues connected to them, and why players play and pay in these games. In the next chapter, I will discuss what the results mean in a wider context, and what kind of implications the free-to-play model has in our game culture.

6 DISCUSSION

In this chapter, I will discuss significant issues related to the free-to-play revenue model, based on my work. I will make five main points about free-to-play games and their effects. First, I will discuss the value of free-to-play games and claim they have been dismissed in our game culture despite their indisputable importance. Second, I bring forward the unique challenges free-to-play games have with revenue and experience, and how finding a balance between them is difficult. Third, I will discuss how fairness in free-to-play games has many dimensions, and is conceived and framed differently than in many other games. Fourth, I will consider the ethical challenges that free-to-play games have and call for informed responsibility and regulation from both inside and outside the industry. Fifth, I will discuss how the free-to-play model has evolved, normalized, and permanently transformed games.

6.1 Recognizing the value of the free-to-play model

Some values of the free-to-play model are well acknowledged. The absence of mandatory payments is one of the best-recognized benefits, allowing playing before paying and also keeping paying both voluntary and flexible. For games with one-time payment, it is often enough to publish a finished game. For free-to-play games to remain profitable, game companies need to focus on constantly improving, developing, and updating games after launch, which is considered as a positive side of the model. However, many other values, such as the values of the game experiences that these games offer are often less recognized, and even dismissed.

Free-to-play games still have a somewhat negative reputation and are treated differently than games with premium-based models. The history of free-to-play games especially on social network services with aggressive monetization, clone games, and even shady business practices have influenced these attitudes, while the lack of a purchase price causes the games to be less valued and to have fewer expectations connected to them. The interviewed players in Article V saw free-to-play games as inferior compared to other, “proper games”. This comparison is in line with earlier findings of an interview study with Facebook game players by Janne

Paavilainen et al. (2013), where some of the informants even denied Facebook games as being games to begin with. Facebook games were compared to “real games” and were less, if at all valued. This attitude was especially prominent among players who had more experience with premium-based digital games, while some others were more accepting and appreciating towards Facebook games. (Paavilainen et al., 2013.)

While the negative attitudes are connected with the revenue model and its implications such as paywalls, aggressive monetization, and pay-to-win, they are also connected to the casual nature of free-to-play games. Especially, one-time payment games are often celebrated as engaging narratives, while free-to-play games offer less immersive narrative experiences, and as never-ending games lack a similar feel of accomplishment that many one-time payment games have. Players in Article V saw mobile free-to-play games as least worthy, and more prone to include negative aspects of the free-to-play model. Mobile free-to-play games are typically more casual than their computer game counterparts. The industry professionals in Article I had observed hardcore free-to-play games getting less backlash than casual ones, as well. Similar attitudes can be seen for instance in the interview study by Brendan Keogh and Ingrid Richardson (2018), where some players divided free-to-play games into categories from which casual games were seen as less worthy.

One reason for these dismissive attitudes can be seen in the way free-to-play games break some of the conventions of traditional video games. Digital games are strongly seen as meritocratic systems, where skill and effort prevail and the best gamer wins. As in meritocracies in general, games include and enforce inequality on a structural level. (Paul, 2019.) Larger premium productions in particular tend to repeat familiar conventions, making skill transfer between games easier, while increasing complexity makes the games less approachable for newcomers. This enforces the position of specific gamer groups as the industry keeps catering to them specifically. Free-to-play games break these ideals, offering experiences where skill is not always at the center, or requiring a different skillset from other games. Many of the free-to-play games have gameplay that focuses on waiting and advancing through clicks. Typically, free-to-play games include detailed tutorials, familiarizing new players with how to play the games with no previous experience. Furthermore, as technology has advanced, partaking in gaming often requires acquiring expensive gear that is not similarly available to newcomers or casual players. Free-to-play games offer lower barriers of entry in this regard as well, taking advantage of equipment that is typically already in use, such as smartphones.

These features are democratizing play, making games more accessible to audiences other than hardcore gamers, whether it be newcomers, casual players, or

players with less time to invest. At the same time, these features can partly explain the opposition and negative attitudes, if they are considered as a risk towards the preferences of existing gaming communities. In free-to-play games, the collected gaming capital is not as useful, and accessibility and the transformed meaning of skill and effort become their points of criticism.

This further explains why more hardcore computer games are better approved of by gamer audiences. Computer free-to-play games such as *World of Tanks*, *League of Legends*, or *Counter-Strike: Global Offensive* have managed to create hybrid experiences, which take the ideals of meritocracy and incorporate them with the free-to-play model. In addition, they limit the possibilities to advance with money, or focus completely on cosmetic in-app purchases. These features make these games more accepted and are sometimes referred as “proper” free-to-play games, or free-to-play games “done right”.

The negative attitudes towards free-to-play games are further connected to the productivity aspects surrounding games. Even more than games with other revenue models, free-to-play games are often deemed as a waste of time. This view has been somewhat challenged by several free-to-play games being prevalent in the esports scene and due to the inclusion of gamified or learning aspects inside the model. *Pokémon Go* is a good example for the need to rationalize play with external benefits, and the game was more accepted due to its gameplay requiring walking outside, increasing exercising among players. Again, especially the more casual free-to-play games suffer from this viewpoint. Keogh and Richardson (2018) describe many free-to-play games as “background games”, as they keep playing themselves in the background, and the player merely keeps checking them periodically, activating even more background processes. Even players who have spent a lot of time on a free-to-play game might afterwards wonder why they played the game, and the outcome of the spent time is not always valued (Paavilainen et al. 2013).

I claim that the feelings of frustration are connected to the progression towards goals that engage us, but which are never reached. When we eventually grow tired of playing a game without anything concrete to show for our efforts, the process may feel pointless. Sebastian Möring and Olli Leino (2016) further connect this to the surrounding neoliberalist capitalism, where we keep working towards future value instead of immediate gratification. According to Feher (2009), instead of consumers or producers, neoliberalism treats people as entrepreneurs who allocate skills to accumulate value and human capital. The distinction of work and play is not clear, as both can be seen as growing human capital – skills and value the usefulness of which has no guarantee (Möring & Leino, 2016). In free-to-play games, players

typically work constantly on repetitive tasks to receive and collect rewards such as in-game currency, items, and achievements, and to improve and modify their character or the game world. The goals towards which the players work are, however, constantly shifting. “Catching ‘em all” in *Pokémon Go* is a never-ending process, as more creatures and variants are frequently added. Finishing the last level in *Candy Crush Saga* might be possible for an active player and give them a breather, but eventually there will always be more levels. Reaching a top position in a competitive game is a temporary satisfaction, as the next round of the contest is always due to start. Thus, the players can work endlessly in the game world without ever reaching the ultimate satisfaction – the end of the game.

One can ask whether making the player work towards vague, unreachable goals in free-to-play games is ethically sound. This is especially relevant when game design and player behavior are connected to utilizing behavioral economics theories (see Hamari, 2011) or dark design patterns, which are claimed to be used to manipulate players to act against their own best interests (Zagal et al., 2013), as discussed in Chapter 2.5. As players stop playing the game, they might not even understand why they have played, or if they do, they may feel betrayed. I suggest that this is a question of a player’s awareness of the game and its dynamics. Free-to-play game companies are often framed as knowingly taking advantage of players, while players are seen as oblivious victims. This is a dangerous view, and we should be cautious in enforcing it (Banks & Humphreys, 2008). Players are often quite aware of the dynamics, and take part in the games willingly and because they enjoy them (Keogh & Richardson, 2018). The goals and gratifications in free-to-play games are framed differently; instead of a final ending that is often found in one-time payment games, free-to-play games offer several smaller achievements and the feel of progression, which we often enjoy. Some interviewed players also described the early parts of the game as exciting, when they are still figuring things out and finding new content, echoing the findings of Keogh and Richardson (2018). In the end, a lot depends on how the games are actually experienced, and to understand this, we need to listen to the players.

Aggressive protection of traditional or meritocratic values and dismissing casual free-to-play games as less important or as a waste of time act as gatekeeping. The valuation and devaluation are further connected to gendered spaces. Casual free-to-play games are often perceived as female-dominated, while the more hardcore free-to-play games are connected to male-dominated play. While men are typically still seen as the primary target of gaming, casual free-to-play games form an exception as they are often created to cater to specific female audiences (Chess, 2017). The systematic devaluation of female pastimes and preferences is not only connected to

games but is clearly visible in the game culture as well. These attitudes further enforce the clichés of women playing unimportant, silly games, and men the “proper” games (Hjorth & Richardson, 2009). As game culture is blatantly full of casual sexism, racism, and homophobia (Paul, 2019, pp. 14–22), this reinforces already problematic environments surrounding games.

In addition to gamer communities, media enforces the meritocratic values and the undervaluation of free-to-play games. Media has played a considerable role in the public image of games in general, and this has been especially true for free-to-play games. News articles have discussed free-to-play mostly in a negative light, highlighting for instance children using money on free-to-play games (Curtis, 2013; Kastrenakes, 2016), free-to-play games being addictive (Smith, 2014) and unfair or illegal (Metro, 2013), or the problematic aspects connected to high-spenders and small paying minorities (Good, 2013; Arora, 2014). While valid concerns, the positive news coverage is typically connected only with the economic aspects and success stories of highly profitable games or companies (Armstrong, 2018), or to cases where free-to-play is done “right” compared to other “flawed” free-to-play games (Orland, 2013). Free-to-play games are not often discussed as positive gameplay experiences, and are not reviewed as often or rated as highly as other games. Game journalists are typically gamers themselves, and free-to-play games have not been valued similarly as they have not been valued within gamer communities.

In research, free-to-play has not been valued as a research topic other than from economic perspectives. The literature reviews in Chapter 3 and in Article VII show that free-to-play games are rarely discussed in the field of game studies and are even dismissed or ridiculed by some game scholars. As game researchers, we have defined which games are important and which we value on a cultural level (Chess & Paul, 2018) or which we perceive as “real games” (Consalvo & Paul, 2019). While there is a place to discuss the critical and negative aspects of the model, even this side is still understudied, stressing the lack of interest and perceived importance.

While the patterns in free-to-play games deserve criticism, they should not be outrightly rejected. I believe these games offer enjoyment that is different from more traditional games. Many of the free-to-play games offer less immersive experiences than other games, but the experiences of engagement are valuable and fulfill different needs. Free-to-play games form a large, versatile collection of games that differ from each other both in gameplay and in the values they offer. The earlier mentioned values of choice and flexibility in paying as well as lower barriers of entry make these games available and accessible for wider audiences. As noted in Article V, the values of social connections, cooperation, and competition can be very important in free-

to-play games. The game design guided by the revenue model can result in new or emerging values, such as experiences connected with patience and slow pace, adding further diversity in games. Productivity should not be a requirement for playing games, and the lack of deeper meaning and external benefits in games can also be celebrated. These values are valid and deserve our attention.

Conclusion 1: Free-to-play games are at the core of game industry, but at the periphery of game culture.

6.2 Conflicts between money and experience

There is a significant, inherent conflict in the design of free-to-play games. In most revenue models it is easier to focus on optimizing the gameplay experience when designing the game. In the free-to-play model, gameplay has a dual purpose: it needs to offer engaging, free gameplay experiences and also have enough motivation for a portion of the players to pay money to further improve the experience. Striking this balance is difficult, and is a challenge acknowledged by game developers. Problems with this balance can lead to a sub-optimal experience for all players. Focusing on features bringing the most profit might cause problems of aggressive monetization, paywalls, and pay-to-win, ultimately driving players away. However, dismissing monetization tactics and focusing solely on game experience might result in a well-liked game that has a conversion rate that is too low to make it profitable.

Despite its challenges, the free-to-play model is currently the most optimal choice especially for commercial mobile game developers. There are many tools and metrics for measuring how well a game is succeeding. In free-to-play games, metrics-based design is important, and choosing and understanding the metrics and knowing how to react to numbers requires new kinds of skillsets in game companies. Larger companies might hire specialists such as marketing analysts, while in smaller companies the staff members might have to educate themselves and buy additional expertise as services from a third party.

The conflict between revenue and experience is visible in the playability aspects and directly causes some specific problems. When these problems are charted and studied, such as in Article II, it is easier to take them into account while designing games. HCI studies can also transform the problems into domain-specific heuristics as has been done by Paavilainen et al. (2018). Being aware of the typical problems and looking at games through the heuristics early in the game development process

helps to minimize their negative effects and save costs (Paavilainen et al., 2018). It is also important to note that heuristics offer guidelines that can be broken as long as the developer is aware of the consequences.

The artificial hindrances discussed in Chapter 5.2.1 are a result of the conflict as well. However, hindrances are not necessarily a negative force considering the game experience. Some hindrances such as timers and grinding create a rhythm and pace for the game (Tyni et al. 2011) which many players enjoy, and they can be a challenge for the player to overcome (Keogh & Richardson, 2018). Hindrances can also be an effective way to monetize the games, as paying for unobstructed play was positively connected to spending money in Article IV. This is further emphasized in the study by Hamari (2015), which links lower satisfaction in the game with higher purchase intention. In other words, when players are not completely happy with their experience, they can try to make it better by spending money. This should not be interpreted in poor gameplay being the target, but highlights the importance in striking a balance between free and paid gameplay experiences.

There are different ways for game companies to include motivation to pay inside the game. The game type can have a significant influence on the chosen strategy. In mobile and social network games, it is common to have offline progress mechanics which can then be skipped with money. At the same time, these mechanics help the game to accommodate the player's lives, allowing shorter sessions throughout the day (Rao, 2008). This functions especially well on platforms that players frequently use for other purposes as well, such as social network services and smartphones. Multiplayer online games can focus more on cosmetic purchases that can be shown off to other players, and on faster unlocking of new characters, cards, or other content to make playing more varied and interesting, but do not make the player too powerful. There are differences between cultures as well. For instance, in game communities in South Korea or China, buying a direct competitive advantage is more accepted than among players in Finland or the United States. Reflecting these differences, the results in Article IV are useful in charting different paying motivations, but they are not all directly found from any one free-to-play game, nor should they all be included in one.

As players use economic reasoning while playing, it can interfere with the experience (Lin & Sun, 2011). However, purchase decisions can become part of the play experience, as well. For some, counting the worth of a purchase might be tedious, yet others might find it fun. Considering whether to buy something or not can be intriguing and the purchase process can feel exciting, while resisting payments can be seen as an extra challenge.

Connected to the revenue model, in order for players to have long playing (and paying) careers, the design of the games is typically never-ending, constantly adding new content. Mechanics to encourage players coming back frequently, such as daily missions and rewards, are one way that seems to work well in keeping players engaged. While more intensive games with other revenue models can be over quite quickly, many free-to-play games can be played even for years (Keogh & Richardson, 2018).

There are no absolute positive and negative experiences in free-to-play games. What someone might consider boring is relaxing to someone else, even if the primary reason in creating the experience would be monetization. It is important in research to hear these different voices and experiences. Current studies are overwhelmingly focused on increasing revenue and improving retention, and research on gameplay experiences is lacking. However, the perspective is not completely missing from academic studies. In addition to the articles connected to this dissertation, Paavilainen et al. (2013) and Kelly Boudreau and Mia Consalvo (2014) help us understand play experiences and social connections in social network games, Holin Lin and Chuen-Tsai Sun (2011) give valuable insights into how players perceive fun and fairness in free-to-play MMOs, and Keogh and Richardson (2018) show player perspectives in mobile free-to-play games, as some examples. The exploratory, qualitative approach is especially important in understanding these varying experiences, and can help us better recognize the challenges and opportunities in free-to-play games.

Conclusion 2: Free-to-play games have unique challenges in finding balances between revenue and gameplay experience.

6.3 Complexity of fairness

Fairness is in the center of the free-to-play game experience, and can be looked at from multiple perspectives. A major fairness issue in free-to-play is between players, especially between those who pay and those who do not. One of the key elements of free-to-play games seems to be that they should provide enjoyable experiences despite whether the player uses money or not. Curiously, playing without paying was not thought as a fairness problem in the industry professional or player interviews. Receiving quality game experiences for free has become a presumed right that even paying players hold on to. As paying is voluntary and an option for everyone, it is

not seen as unfair or as an inequality problem. In theory or in an optimal situation, those with more opportunities to pay for the game do so, and those with fewer opportunities still get to play and enjoy the game. From this perspective, free-to-play games can be seen even as fairer than traditional games, where all players, despite their economic status or time and possibilities to enjoy their investment, must pay the same amount of money.

This is somewhat in conflict with the often brought up problem of high-spending minorities. The paying players fund the development of the free-to-play game on behalf of the whole playing population, including the non-paying players. Typically, only a minority of the players pays anything, while a small percentage of paying players pay high enough amounts to form most of the revenue. It can be argued that free players would be freeloaders who take advantage of others funding the game also on their behalf. However, there are other ways that non-paying players contribute to the game. As they often form the majority, they create a feel of community and market the game to new players (Tyni et al., 2011). They also form a comparison point for those who do pay, making it possible to be distinguished from the crowd. This way, the paying players can feel they are receiving something valuable that not everyone has.

Free-to-play games should be fair (or fair enough) in not giving too powerful advantages for certain groups of players. This perspective is visible and vocal both in the voices of players and of industry professionals. One key element in the disrespect towards free-to-play games is how they offer a way to progress with money instead of plain skill and effort. This is against the mentioned meritocratic ideals, and may even be seen as a corruptive force. Especially if money can be used to overcome skill and effort in a competitive setting, the games are called pay-to-win, which is seen as one of the most negative sides of free-to-play, especially in the Western game culture. Using money to advance is considered unfair, as players have different amounts of money in use to begin with. However, the same can be said from other aspects needed for a player to succeed in games in general, including expensive gaming gear, transferrable skills between games, status in the gaming communities, and the time available for playing games. Free-to-play games equalize some of these challenges, and for instance, instead of using a lot of time on a game, a player can use money to compensate for their busy lives (Kinnunen et al., 2016).

Another point of fairness in free-to-play is between the game company and players. While playing and paying are completely voluntary activities, the game company has a lot of power over the players. Unless the developers allow player-to-player trade, they have no competitors in selling the in-game content except for black

markets. The game developers decide the value of the in-game currencies, what is sold in the game, and what the prices of that content are. They are in control of the market, and can sell items to players exclusively, while players cannot sell the items back or forward to other players. The purchased content only has value in the specific game and cannot be transformed. Developers can decide when to change the prices or when to give discounts. They can also affect the value of items by controlling their rarity and properties. For instance, rarity can be controlled by limiting the availability of a specific item, and making it more widely available later decreases the perceived value. The same is true for powerful items, as introducing even more powerful items can again lower the value of the original items. Game companies have the control over sold content even after it has been sold, as players do not actually own the content, but merely buy access to it. When changes happen or a game shuts down, the creators have no obligations to compensate players for the lost content or return the invested money. Games often use language that indicate ownership, as they advertise selling characters, currency, or other items, not access. Therefore, players might believe they own in-game items, which can result in experiencing unfairness in situations that take the perceived ownership away.

In addition, fair play and player behavior are in focus in free-to-play games. Different ways to advance create conflicts inside free-to-play games, especially when the games include direct competition and teamplay with strangers. Free-to-play games can also visually distinguish players who have used money from those who have not, increasing the tension between the groups (Lin & Sun, 2011). Toxic communication is not a revenue-specific phenomenon, but a problem in multiplayer games and communication channels in and around digital games in general (Paul, 2019). In free-to-play games, the conflicts between using time and using money as well as between having skill and buying skill amplify these problems. In addition, in games with a purchase price or a monthly fee, banning accounts is more efficient, as the players would lose their monetary payment and thus be more careful with their behavior. In free-to-play games, the low threshold to join a game and create new free accounts increase the possibility of misbehavior and troll accounts (Lin & Sun, 2011). Game companies can fight these problems by moderating discussions, limiting the communication tools, and offering ways to mute, block, or report players. Finding the best ways to battle toxicity is a complex and continuous process, and the provided tools can even create new ways to harass or troll players. In some games, such as *Hearthstone* or *Clash Royale* (Supercell, 2016), the communication tools have been limited to a few pre-selected lines or emoticons. While this is a way to stop players from writing obscenities or threats, the buttons can be spammed in an

attempt to irritate or harass the opponent (Paul, 2019, p. 129). A report tool can also be misused as another tool of harassment by making false reports (Paul, 2019, p. 121).

As can be seen, free-to-play games have connections with fairness and equality that are different from many other games. They can seem both fairer or less fair and more equal or less equal than other games, depending on how we look at them. Analyzing these features critically can reveal not only fairness characteristics in free-to-play games, but also make fairness issues inherent in other games more visible.

Conclusion 3: Free-to-play games frame fairness and equality differently than other games.

6.4 Tackling ethical issues

While the free-to-play model was not seen as unethical by default, it was seen as more prone to include ethical issues than most other revenue models in the game industry. Again, comparisons to one-time payment games revealed both positive and negative aspects. With the free-to-play model, customers get to try the game before buying anything, making the decision to spend money more informed. However, with the premium models, customers are less impulsive and consider which games they choose more carefully. Impulsive purchases in free-to-play games can more easily lead to problematic playing behavior.

Many of the ethical challenges connect to money. While these concerns focus especially on high-spenders, the paying players in Article V did not see their own consumption as a problem even when the sums were relatively high. On the other hand, according to Dreier et al. (2017), high-spenders are most vulnerable to addiction. What is relevant to note here is that spending high amounts of money does not automatically equate to a problem. When it comes to problematic playing, the surrounding circumstances can be important to define the problem (Meriläinen, 2020, p. 177). However, some do get addicted to free-to-play games, and the problems and consequences related to addiction can be serious and should not be downplayed. Addiction to games can negatively affect health, social relationships, or other aspects of life. In addition, as a player can usually keep spending money on a free-to-play game without limits, the total spent can rise steeply and may cause financial problems. Currently, research on free-to-play game addiction is scarce and the discussion revolves more around individual cases and anecdotal evidence than

academic research. Furthermore, as with game addiction in general, addiction in free-to-play games can be difficult to study reliably.

The next important question is how to approach addiction and problematic playing behaviors. The interview studies in Articles I and V take a relatively strong stance for the individual responsibility of the player's own actions. However, developers are not free from liability. For players to be able to make informed, reasonable choices, game developers need to deliver enough transparent information to support those choices (Blaszczynski et al., 2011). In other words, players need to know beforehand that the game includes in-app purchases, the real cost of items, use of data and viral marketing, and the possibility to play without paying (Paavilainen et al., 2018). Before using money, players need to know what they are receiving and what the consequences of spending money are. When decisions are based on accurate and sufficient information, the responsibility is shifted towards the players. This view is challenged if the player is not able to make informed decisions for other reasons, for instance due to being under-age. Game developers can take vulnerable groups into account by not targeting in-app purchase marketing towards children, having age restrictions, by clearly informing players about real money purchases before and when they happen, and by verifying the purchases at least for the first time they happen. In the case of children, this responsibility is then shifted to the parents or guardians.

When free-to-play games approach gambling, they may have similar problems. These problems are most evident in free-to-play casino games and games with random purchases that resemble lotteries, such as gacha mechanics and loot boxes. These have also been the focus of discussions when considering restrictive measures through policies and legislation.

The similarities with the gambling industry can be also used as a benefit, as the gambling industry has dealt with similar issues, and policies on responsible gambling are already in place (Blaszczynski et al., 2011). As mentioned in the interviews in Article I, when the developers working with gambling games have clear regulations as to what is allowed and what is not, it helps them in not having to deal with ethical dilemmas as frequently in their daily work. In addition to offering solutions and help for development, practices from gambling can offer tools for players as well. Offering player behavior tracking tools combined with individually set limits are a common practice in responsible gambling policies. Implementing these tools in free-to-play games gives more power to players and helps especially those with problems of limiting their own playing and paying. If using these tools is voluntary and players can decide their own maximum limits, they support the freedom and responsibility

of individuals, but help when players have difficulties controlling their activities. As problematic playing always depends on various situations outside gaming, it is important that the tools do not set any specific, global limits that would be enforced upon players in different life situations. These tools can also support other vulnerable groups, such as children, and help parents be better informed about their children's gaming practices.

As free-to-play games typically rely on high-spenders, limiting spending might feel counter-intuitive for the business. While there might be some effects on revenue, these tools do not stop high spending, but rather protect players from spending peaks and help playing and paying not become a problem in their life. Simultaneously, responsible gaming policies can work as a competitive advantage for the company (Gainsbury et al., 2013). Both the interview study in Article V and the survey study in Article IV suggest that the company reputation is one of the major motivations to decide whether to spend money on a game, and good publicity can also give a game company an edge over other companies.

While responsible design decreases the probability of problems connected to accidental spending, for instance, it is important to have mechanisms to deal with them when they happen. Previously, companies may have been reluctant to cover accidental purchases. Facebook has been uncovered to even discourage developers to try to stop accidental purchases by children, calling them “friendly frauds”, and to advise companies to give in-game items to players rather than refunds (Halverson, 2019). Google and Apple have settled legal cases and agreed to refund children's accidental purchases (Prasad, 2013; Reid, 2014), while Amazon has been forced to offer refunds in court (Kastrenakes, 2016). On the other hand, some game companies have internal policies to make refunds easier or provide clear information. For instance, Supercell has a specific webpage and contact information for parents, while some of their games use mechanics such as double clicks and confirmations to decrease the probability of accidental purchases.

When games include ethical problems, there is a question whether it is deliberate unethical design or merely clumsy design. The most serious ethical issues are connected to intently malicious attempts to get players pay money by false marketing or by mistake. As the game market is open to all parties, it is inevitable that the success of the revenue model invites actors that try to take advantage of the situation. For this reason, even if game companies could create working regulations and tools to help with problematic patterns, as they should, these solutions are not enough until they are enforced and binding to all actors. Furthermore, game companies that rely on the revenue should not be expected to self-impose policies that would

possibly cut the income. Therefore, I argue that the game industry, and the free-to-play game industry specifically, needs to be more carefully regulated from the outside. These regulations can be dictated by platforms and marketplaces, and enforced by local or international legislative bodies. The specific nature of free-to-play games should be considered, and merely applying regulations in a way that has worked in the past and with previous revenue models is not directly applicable. Furthermore, as games and the game industry are in a constant change, this work is never finished, but needs constant updating and negotiation.

Free-to-play games are already being regulated. The European Commission has enforced policies where free-to-play games cannot be marketed as “free” and need to include a clear indication of including in-app purchases (European Commission, 2014). In Japan, some gacha mechanics have been banned (Akimoto, 2012), while in Europe, the discussion on loot boxes is ongoing with some countries already banning or limiting their use (Holt, 2018). But the danger here is that the regulations are constructed with inadequate knowledge, damaging games that would already be following responsible practices. It is therefore important that the committees negotiating the legislation involve experts such as researchers and industry practitioners who are familiar with the business and how the games work. Otherwise, there is a danger that the regulations will be either too strict and unnecessarily cripple the industry or individual companies, or not applicable.

A lot of the discussion and regulation focuses on addiction and on real money purchases, but the issues of privacy and the use of data are important to investigate as well. Free-to-play games collect high amounts of data from players, and can require access to the user’s activity, contacts, photos, and so on. Location-based games constantly track the player’s location, sometimes even when the game itself is closed. Thus, it is highly relevant to know how the collected data is used. Game companies often require the player to accept an end-user license agreement (EULA) and privacy policy, but knowing the most important points of the data use should not require the user to read and understand long legal documents. Regulations already exist and have been updated, but issues of uncovering misuse, selling data to third parties, and inadequate security of stored data are difficult to monitor and track, and might be visible only after security breaches have occurred. In addition to constantly trying to uncover violations, informing consumers of the risks and game companies of the importance of storing the data safely are much needed steps.

To sum up the different sides of ethical issues, free-to-play games need to 1) offer enough information for the player, 2) be built following ethical guidelines, 3) offer tools for self-monitoring and self-regulation, and 4) store user data safely, in order

to be considered as responsible. Acknowledging and taking responsibility for ethical issues is of great importance in order to keep the free-to-play model growing, and not to be too strongly and broadly regulated from the outside. Policies and legislation also need to come from outside the industry, with responsible game companies following stricter guidelines and practices in their development.

Conclusion 4: Free-to-play companies need transparency, responsibility, and legislation.

6.5 Normalization and legacy

During the brief history of free-to-play games, they have evolved, grown more popular, and become more diverse, covering a growing number of platforms and genres. When this dissertation process started, the discussion around free-to-play games was largely focused on mobile and social network games and their popularity, problems, and opposition towards their ways to fund and play games. While already successful, their popularity was only beginning. In Article I, the first in this dissertation in chronological order, the interviewees mentioned players condemning all free-to-play games solely because of their revenue model. The earlier games included many issues that have since been improved on, but the problems of the past could still be seen in player attitudes years later in the interview study in Article V. However, better experiences with modern free-to-play games had improved these attitudes.

During the dissertation process, the model has become more common and started to achieve a status as an accepted way to develop and consume games. In Article VI studying motivations to play *Pokémon Go*, the game being free or having in-app purchases was already a non-issue, and rarely mentioned by the respondents as a positive or negative feature. This signals that the revenue model is no longer the focus of the games. However, the process is slow, and premium games are still valued over free-to-play games in many gamer communities. While the model has become more accepted, the games inside the model continue to be divided into “proper” and “invalid” games. Casual and mobile games are still seen as inferior by the gamer communities compared to more hardcore computer games.

Game experiences, especially those connected to social aspects of free-to-play games, have become more meaningful. In previous research on experiences in social network games, these have been considered as “single player games with a social

twist” (Paavilainen et al. 2013, p. 807). In the interview study in Article V, the social aspects were often identified as the most important and memorable parts of the games. On the other hand, this increase of social importance has increased problems connected to it, including toxic behavior, tension between player groups, and amplified issues connected using bots and hacks.

Another considerable change is how paying in free-to-play games has been normalized. Spending money on free games has been described as pointless in earlier research (Paavilainen et al., 2013), while in Article V it was described as a positive, normal activity. While the study deliberately focused on paying players, these informants were easy to find, and their descriptions of changing attitudes towards paying had been supported by the increase of the quality of the games and easier purchase processes. Distrust and difficulty of using money has been recognized as an obstacle for using money in earlier research (Paavilainen et al., 2013), but as paying for virtual content has become more common in general, it has become more accepted in games, as well.

As the free-to-play model has proved successful, its consequences impact on the entire game industry. There are several directions and signs where this can be seen. The most obvious direction is the increased pressure on game companies to turn to a free-to-play model and change their business strategies accordingly. This can be seen in the interviews with industry professionals, as well as the continued increase in the number of free-to-play game companies and games. In these cases, companies can either start creating free-to-play games, or transform the models of their existing games. The transformation has been especially visible in the MMO genre, where several subscription-based games have dropped their mandatory monthly fee and incorporated voluntary purchases instead. While there are many success stories, the change of a revenue model might not always go smoothly and may result in less enjoyable game experiences and balance problems between paying and non-paying games. This continues to show that the incorporation of the free-to-play revenue model is not a trivial issue.

Free-to-play has not conquered all platforms as efficiently. Game consoles especially are dominated by games with a purchase fee, and revenue from free-to-play games are in decline (SuperData, 2020). I can see a few reasons for this. The first reason is related to game consoles, which, unlike smartphones and computers, are mainly dedicated for gaming. Free-to-play games that would utilize offline progress mechanics or otherwise base their gameplay on the player visiting the games frequently in short sessions would not be practical if the player uses a console mainly for playing games. This limits the types of free-to-play games that best fit on

consoles. The second reason is the smaller player base. Less people own game consoles compared to computers and smartphones to begin with, and the market being fragmented to several competing consoles further divides the population. Many free-to-play games that are not based on offline progress mechanics and sessioning are based on online competition. As all the major console platforms require a monthly payment to participate in online multiplayer games, this further limits the number of possible players to those paying the fee. Large player populations would be especially important in free-to-play games, in order for them to be profitable. The third reason includes the controls. A controller is useful in many types of games compared to a keyboard and mouse or a touch screen, but less so in quick-paced strategy or shooter games needing fast precision, which means that especially players interested in the esports scene would typically choose a computer platform to optimize their performance. Consequently, mainly some of the more successful competition-based and MMO games have found their place on console platforms. This might change if free-to-play companies manage to find better-suited gameplay mechanics specifically for console players.

Free-to-play games can be adapted in other ways than just inside the model. This can be most clearly seen in the one-time payment and subscription-based games that have incorporated in-app purchases in their games, while not removing the other mandatory fees. This development has been met with opposition, being criticized as trying to get more money from players who have already paid for the game. The implementation can therefore fail in the eyes of the public, as was seen in the case of *Star Wars Battlefront II*. The opposition eventually caused the developers to change the in-app purchases, but the negative reputation of the case may have long-reaching consequences, similar to the early experiences with aggressive free-to-play games. However, there are commercially successful attempts as well, including for instance EA's Ultimate Team modes in *FIFA* games.

The free-to-play model has influenced player audiences as well. Due to the new possibilities and ways to play games and lower barriers of entry, games are being played by larger audiences than ever. The audiences of free-to-play games are more diverse in gender and age than in other forms of gaming, helping to break some of the structural diversity problems. Diversity can be also seen in game types, and the free-to-play model has given more space for casual gaming and helped in popularizing game types such as multiplayer battle arenas, battle royale games, and location-based games.

It is difficult to say where free-to-play will go next. During the past decade, free-to-play has spread at an unforeseen pace, evolved into different game types, and

expanded on several platforms. Similarly, paying in free-to-play games has become more acceptable and common, helping game companies to receive revenue from bigger populations and be less reliant on high-spenders. While the evolution will most likely continue, it is unsure how long the free-to-play model can continue to increase its market size, and we might already be at a point where this progress stagnates. But while the free-to-play thrives, the market has room for other kinds of games as well. For instance, games with one-time payments have their benefits and can provide experiences that are not possible for free-to-play games. However, the free-to-play model will not disappear, and it has managed to cement itself as one of the cornerstones of the game industry.

Conclusion 5: The free-to-play revenue model has permanently transformed games.

6.6 Summary

In this chapter, I have critically discussed the significance of the free-to-play model based on my research, and in connection with previous research. I have criticized the undervaluation of free-to-play games and connected this to their casual nature and gendered audiences. I have further discussed the challenges that integrating the revenue model inside gameplay has caused for the games under the model, as well as the fairness questions connected to paying – or not paying – in the games. Considering the ethical issues connected to the model, I have called for transparency and self-regulatory tools from the free-to-play game industry, and fair and working legislation from outside of it. Finally, I have discussed how free-to-play games have evolved and normalized through time, and how they have transformed the game industry and the consumption of games. I have drawn five main conclusions:

1. Free-to-play games are at the core of game industry, but at the periphery of game culture.
2. Free-to-play games have unique challenges in finding the balances between revenue and gameplay experience.
3. Free-to-play games frame fairness and equality differently than other games.
4. Free-to-play companies need transparency, responsibility, and legislation.
5. The free-to-play revenue model has permanently transformed games.

Next, I will conclude by summarizing my work, considering my own path, position, and the limitations of my research, and offer some suggestions of future directions in free-to-play research.

7 CONCLUSIONS

When I started this dissertation process, I had a goal. I saw the potential in free-to-play games, appreciated many of them, and wanted to use my research to make them better. The whole premise of my research started with the assumption that there was something wrong with free-to-play games, and I would help to “fix” them. My gaming friends who would question my study topic approved of this view. I was one of “the gamers”, and while I might have spent countless of hours on free-to-play games and had fond memories of simple games like *Cow Clicker*, I too would see them as inferior to the “proper games”. While I did not recognize it, I wanted to claim these free-to-play games for the gamers.

While my goals were earnest and came with good intentions, they were flawed. However, as I was not alone in my views, and they resonated with some of the findings from the studies included in this dissertation. It was apparent that the “hardcore” free-to-play games were more approved of, even embraced, while casual and mobile free-to-play games were dismissed and criticized. Of course, the people heard in these studies matter, and the voices were restricted due to the methodological choices that were made. Hearing diverse voices in terms of gender, playing habits, and preferences requires more work and effort, but if we as researchers want to understand playing games in its entirety, we should be willing to go the extra mile. My process changed my view, and it has made me a better researcher, and a better player, too.

In this dissertation I have shown a comprehensive view of what free-to-play games are, where they came from, how their revenue model has influenced games, what problems are related to the model, and why players engage with them. But as with all research, this has also had its limitations. The research has been conducted in Finland, by Finnish researchers, and in the case of the surveys and interviews, with Finnish informants. This is especially important to note when studying the free-to-play model, as games, attitudes, and policies can be very different in different geographical locations, and there are notable differences especially between Western and Asian free-to-play games and in the attitudes towards paying and pay-to-win aspects in those games.

It is also important to note that the chosen approaches have influenced the results. Data collection methods, choosing informants, the timing of each study, as well as other approaches taken in each article have had their effects. Some of my research ended up studying certain parts of the phenomena: one studies social network games, another focuses on mobile free-to-play games, and some studied the perspectives of male gaming hobbyists. Similarly, while the work here is considered to be interdisciplinary, there are further disciplinary boundaries and fields of studies to cross. Especially, media studies and political economy have fruitful approaches when considering the values, politics, and ethics surrounding free-to-play games. It is in the nature of scientific practice that it includes continuous, never-ending approaches to uncover and approach the truth rather than finding definite, final answers (Mäyrä 2008, p. 3). So these shortcomings can be considered and complimented in future studies.

Free-to-play games are massive, whether we look at them from the point of view of economics, playing populations, or their influences on the game industry and game design. Free-to-play games form a complex phenomenon that has disrupted the game industry. They have become a fundamental part of how we make and consume games, and have caused one of the most influential changes in the history of digital games. They have become a cornerstone of the game industry, but paradoxically are not recognized as a valuable part of our game culture.

Free-to-play games do have their challenges. The need for the games to earn their revenue during gameplay inevitably has its influences, while the possibilities to buy in-game content raises questions of fairness between paying and non-paying players. We should especially consider the ethical implications. For free-to-play games to be considered responsible, they need to be transparent and offer enough information to players for them to make informed decisions. Free-to-play games also need to be regulated, and by creating working legislation, we can better ensure the player's rights and create improved guidelines for game creators.

The free-to-play revenue model comes with both controversial and positive aspects, and deserves a critical, unbiased attention from the research community. Even with the extensive work undertaken throughout these years, I ended up only touching the surface. The continuous efforts of the scientific community are what finally makes the field stand out and make an impact. In the future, we should embrace free-to-play games as real games with real cultural value, and target them with the same critical lens we have directed towards other games. Qualitative research is an especially valuable way to extract experiential meanings, target specific player and game groups to uncover the broadness and diversity of the area, increase

discussions with game creators, focus especially on non-gamer and non-male audiences, solve ethical problems, and participate in committees as experts to create fair and working regulations and legislation. In this regard, the work has just begun.

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PUBLICATIONS

ARTICLE I

Free-to-play games: Professionals' perspectives

Kati Alha, Elina Koskinen, Janne Paavilainen, Juho Hamari, & Jani Kinnunen

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Free-to-Play Games: Professionals' Perspectives

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ABSTRACT

This paper investigates the free-to-play revenue model from the perspective of game professionals. To court larger player audiences and to address their wide willingness-to-pay spectrum, game developers have increasingly adopted the free-to-play revenue model. However, at the same time, worrying concerns over the revenue model have been voiced, deeming it as exploitative and unethical. We investigated this contrast by conducting an interview study. We employed thematic qualitative text analysis process with the data containing 14 interviews with game professionals about their views on the model. The results show that the free-to-play model is something that developers view favorably while it was felt that the public writing about the games can be negative, even hostile. Relatively few ethical problems were seen that would address the whole model while for instance the combination of children and free-to-play was seen as problematic. Even with some concerns at the moment, the future of the free-to-play games was seen bright.

Keywords

Free-to-play, freemium, game industry, attitudes, ethics, future

INTRODUCTION

Free-to-play (F2P) has become an increasingly popular revenue model for the video games industry. A F2P game can be acquired and played free of charge while players are encouraged to buy virtual goods during game play. Utilized on multiple platforms such as gaming consoles, computers and mobile, F2P has found its way into massively multiplayer online (MMO) games, social network games, multiplayer shooter games, mobile casual games, gambling type of games etc. There are several examples of F2P's success within different domains. For the mobile iOS platform, F2P is the dominant revenue model in the top grossing applications chart (Appshopper, 2014). On PC, Team Fortress 2 (Valve, 2007), which was first launched as a retail game in 2007, was re-launched as a F2P game in 2011, resulting in twelvefold increase in revenue (Miller, 2012). The majority of commercial social network games in Facebook are utilizing F2P as well (Paavilainen et al., 2013).

Despite the success, the F2P model has also raised controversy and criticism. Some companies have gained a poor reputation from utilizing F2P (Alexander, 2013). The European Union has recently released a press release to investigate challenges in F2P game marketing (European Commission, 2014). F2P gambling games in social networking sites are feared to attract minors towards real money gambling games (King et al., 2014). Academic researchers have also criticized F2P (e.g. Bogost, 2014) and recent research has shown that certain F2P design choices cause playability problems and poor game experiences (Paavilainen et al., 2013; Paavilainen et al., in press; Zagal et al., 2013).

The controversy and criticism mainly arise from the nature of F2P as game developers need to consider how to monetize the players during gameplay. In some cases, this has resulted in exploitative game design where aggressive monetization strategies aim for short-term profits instead of long-term player engagement.

Due to the novelty of the F2P revenue model and the emergent discussion surrounding the phenomenon, we argue that understanding the game industry's perspective is important for acquiring a holistic view on this topical issue. Therefore in this paper we present an interview study on game industry professionals' perspectives towards F2P. For this study we interviewed 14 Finnish game industry professionals from six different companies. This paper presents and discusses four themes based on the interview data:

1. Game industry professionals' attitudes towards F2P
2. Presumed players' attitudes towards F2P
3. Ethics of F2P design
4. Future of F2P games

To the best of our knowledge, this is the first paper to present such qualitative study and it provides interesting insights for both academics and practitioners.

FREE-TO-PLAY REVENUE MODEL

The F2P revenue model can be seen as a form of a larger freemium business model paradigm (Luton, 2013a; Seufert 2014). Sometimes the terms “free-to-play” and “freemium” are used interchangeably (in the video games context) but for clarity, we will use “free-to-play” and its abbreviation F2P throughout this paper when referring to freemium video games.

Contemporary F2P video games appeared in the late 1990s and early 2000s when popular Asian MMO games such as Neopets (JumpStart, 1999) and MapleStory (Nexon, 2003) used the F2P model to gain revenue by selling virtual goods. In social network services, F2P games started to appear after Facebook was opened for third party application developers in 2007 (Mäyrä, 2011). Facebook games became very popular due to the social network integration and F2P revenue model which together provided a viral distribution channel and easy access to browser games. Games like FarmVille (Zynga, 2009), CityVille (Zynga, 2010) and Candy Crush Saga (King, 2012) have gathered millions of players – and also criticism on their game design (Alexander, 2013). Meanwhile games with downloadable clients have started to utilize the F2P revenue model as well.

There are two main reasons for using the F2P model. First, it allows flexible price points for players with different levels of willingness to pay for additional content. Second, it enables a wider range of player segments to access the game. (Paavilainen et al., 2013.) Furthermore, the games-as-service approach enables the developers to iteratively tweak

game mechanics to better address the goals of customer acquisition, retention and monetization. (Hamari & Lehdonvirta, 2010; Hamari & Järvinen, 2011; Hamari, 2011.)

F2P games often feature the double currency model where players can earn soft currency via completing gameplay tasks and buy hard currency with real money. More often than not, the player can convert hard currency to soft currency but not vice versa. In some F2P games, the player might be rewarded with small amounts of hard currency from time to time. While soft currency is used in the game to buy basic items related to gameplay, hard currency gives access to premium content which is often exclusive to paying players only.

METHODS AND DATA

The objective of the study was to acquire rich qualitative data about the attitudes and ethics revolving around the F2P model. To achieve this, game professionals were interviewed.

Six Finnish game companies were selected for the study. The game companies covered mobile games, AAA games and money games (gambling). The game companies were asked to select the interviewees by themselves. Each company was asked to find 2-3 persons to take part in the study. Altogether 14 interviews were conducted by four researchers.

All of the interviewees filled a pre-study survey, which charted background information. The interviewees had game industry experience for an average of about nine years, varying from 1 to 20 years. There were various roles involved: managers, developers, designers, artists and analysts. 10 out of the 14 interviewees had worked on F2P games and all of them were male.

The actual interviews were conducted in person at the companies' own spaces. The interviews took 1 hour 13 minutes on average, varying from 53 to 100 minutes. A couple of the interviews had to be cut short when the interviewee had to proceed to other work duties. The interviews were semi-structured, thematic interviews. They were audio-recorded and transcribed.

The transcribed interviews were analyzed with Atlas.ti software by the research team. We followed a thematic qualitative text analysis process as described by Kuckartz (2014). The findings were categorized into four groups: "Game industry professionals' attitudes", "Presumed players' attitudes", "Ethics" and "The future". The results concerning these themes are presented in the next chapter. Quotations are used as examples of typical thoughts or to outline the variety of opinions. The quotations include information of the informants: the area of the company of the professional, his current position in that company, and if he had work experience with F2P games.

RESULTS

Game Professionals' Attitudes

Game professionals have mixed attitudes towards F2P games. Generally these games were seen in a positive light, but also conflicting and down-right negative aspects arose from the interviews.

The positive attitudes revolved around many aspects. The fact that the games are free to try and play was seen as a great benefit, and playing the games was seen as a fun pastime.

“It’s nice that you can try [the game] and you don’t have to pay anything for that joy yet.” – gambling, game designer, F2P: no

The model was compared to the more traditional model in many occasions, and the pricing of the current purchasable games, 60–70 euros, was viewed as high for a game you do not have the chance to play first. In F2P games you can try the game and then decide if you want to pay for it or not. In that respect it was seen as an even better and fairer model.

Furthermore, paying would not commit the player to continue to pay in the future, but everyone can decide how much they are willing to pay, and at which stage. It was also stated that F2P games have to be good to get people to continue to play them and to pay for them, whereas traditional games could be bad and still get the players’ money.

Similarly, it was noted that F2P games are often developed forward after the launch. Other games make most of their profit right away, and there is not a similar interest to keep evolving them. F2P games have to earn the money after the player has already made the acquisition decision.

When talking about negative issues, aggressive monetization was generally seen as bad or as a sign of a bad game and the way of greedy companies:

“Some of the companies seem to be designing games purely to make money. You can see it immediately when you start the game and it doesn’t really have any content.” – mobile, data scientist, F2P: yes

However, one interviewee did note that at the same time aggressiveness was something that seemed to work at the moment, so you had to be careful not to reject it completely. It was also something that had changed according to the professionals – F2P games had become a bit less aggressive.

Clone games and poor game design were seen as problems. It seems that the F2P model has had a relatively big portion of abuse and bad design, and this was explained at least partly because of the success of the model, drawing copycats and seekers of quick profits; but then again, it was pointed out that same goes for anything else that is as successful.

One of the biggest criticisms was aimed at pay-to-win, which means that the players with the most money to use get unfair advantage over players who do not use money. Paywalls, points that stop the advancement if the player does not pay, were also seen as negative.

“I have never much liked the thought that we go to this pay-to-win kind of world, where one might not succeed or proceed in the game very well or playing isn’t that much fun if one doesn’t pay small sums of money all the time.” – mobile, artist/AD/project manager, F2P: no

The general view went as far that everything in the game should be possible to be achieved without paying – at least in theory. If everything was achievable through playing, the game was seen as fairer – which in turn could actually make the player to eventually pay more gladly as well.

The negative points were mostly aimed only at a part of the games, and there is an immense difference between the games inside the revenue model. Some professionals were worried

that with the F2P model, the game design is guided to a certain direction, and that games are designed on the basis of how much money they can make instead of creating good games. Others noted that while there are the games and game companies that only have profits in sight, there are also quality games offering fun experiences – for free.

There seems to be a difference between the attitudes of those who work with F2P games and those who have never developed them, and the more negative attitudes mainly came from the latter group. The work with F2P games had sometimes changed the personal attitudes into more positive ones. Not one of the interviewees working with F2P games saw working with these types of games as something unpleasant or negative; on the contrary, working with the F2P model was seen as an interesting challenge.

Business-wise, F2P model was seen as the most optimal choice at the moment, at least on the mobile market. Almost all of the top-grossing games on App Store are currently F2P. The model was even seen almost as the “necessary evil”, as one of the interviewees phrased it. Even the companies not currently at the F2P business had to have considered it in one way or another, and some had plans on entering the business in the near future.

Professionals on Player Attitudes

When talking about what kind of attitudes the game professionals have noticed or presume there to be towards F2P games, it was evident that the attitudes seemed to be fairly negative. It was said that people with negative attitudes do not even touch the games even though they would be free to try.

The professionals saw the discussion as very polarized and in the control of a small loud minority. On the internet opposition was said to be brutal – even a mention of a game being F2P is usually greeted with fierce opposition, even contempt. Sometimes the aggressive opposition and condemning of all F2P games solely on their revenue model was seemed as unjustified, even unfair.

“Every time you see something written about free-to-play games or a new game is published, for example Plants vs. Zombies 2, which was a highly anticipated game, people just go crazy. A lot of hate writing emerges just because of the fact that it’s a free-to-play game.” – mobile, game designer, F2P: yes

The loudest opposition had been noted to come from hardcore or core gamers, who are used to a different kind of models and games. F2P games differ completely from other games, which either cost a certain amount of money or are truly free. It was noted that the gamers are afraid that the “real” games will suffer or disappear because of the ever-growing F2P trend. Curiously, at the same time it was noted that this same core audience is the source of the biggest consumption in F2P games.

It was suspected that one of the reasons for such opposition was simply opposing change. Another speculated reason for the negative attitudes lies in the history of F2P games – early F2P games were aggressive in their monetization and shallow in their gameplay. Zynga’s games were mentioned as something that has had a permanent impact and given a certain type of stigma to the whole F2P industry that still has not faded. Even frustration arose from the fact that it is still the assumption that current games have not changed from that time. Another similar suggested reason was the sheer amount of poorly designed and aggressively monetized games still around.

There seem to be exceptions to the rule, however. According to the game professionals, more hardcore F2P games get much less backlash than casual ones. Why this is was not an easy question to answer. There are a handful of popular hardcore games that are considered good; Team Fortress 2, League of Legends (Riot Games, 2009) and World of Tanks (Wargaming.net, 2010) were mentioned here. At the same time it was noted that this is not a model that everyone can copy, as there is space for only a few games of this magnitude on the market.

“The easy answers [for good F2P games] are Team Fortress 2, League of Legends and World of Tanks. But when you have a dominant position in your field and you have a huge amount of players, it won’t be a problem to make the game profitable. [--] There is such a small amount of games that can do this, so in that sense they are a bit bad alternatives. [--] If everyone would copy this, there would still be a small handful, three games, in the top.” – AAA, head of design, F2P: yes

Not all of the attitudes the professionals had encountered were negative, but positive attitudes did not seem to rise as much as the critique. However, it was obvious to some of the interviewees that there is a big audience out there that enjoys playing these games. F2P games are not the only ones receiving critique, and in one case it was even suspected that the high price of premium games is sometimes even a bigger target for complaining.

The attitudes seem to have changed. It was speculated that nowadays it is more acceptable to pay for virtual goods, and one suggested reason for this was that it has become more commonplace in general to pay for digital content, both in games and in other goods, such as ebooks.

Some game professionals want to fight against the bad reputation of F2P games by showing how good these games can be. The games are getting better all the time, but getting there is not always easy. Some of the professionals mentioned that especially the balance between fun and profit is difficult to find.

One way to help with attitudes is simply to take care of customers. Some of the companies put great efforts on customer support, such as being present on forums and answering questions. The players value that their questions and problems are taken care of. Changing the attitudes for other than the players of the game was seen as substantially harder process, and maybe not even such a useful battle to fight.

Ethical issues

When discussing the ethics of F2P games, the model as such was not seen as unethical, but individual games and game companies might have acted unethically. This again, was defended by the success of the model, drawing all kinds of fortune-seekers:

“Every time this kind of gold rush phenomenon is born – that “now someone made millions with free-to-play games, let’s go and do those since there is easy money” – some go overboard.” – mobile, product lead, F2P: yes

Some game professionals saw F2P games as ethical as games with a more traditional model. In some cases it was considered to be more unethical to make a bad game, advertise it well and sell it with 60 euros than to ask money within a game when you do not even have to pay if you decide not to.

It was stated in several occasions that making money with games does not differ from any other industry in some sense, and it might even feel weird that games are under such surveillance when other consumption is not. However, the games do have their characteristic features that makes marketing and maximizing profits in games feel bad in some, perhaps hardly explainable way:

“Of course business is based on maximizing profits and everybody does market research and analyzes consumer behavior. I don’t know, when it comes to the game market it just feels so... devious.” – mobile, designer/producer, F2P: yes

Milking the paying players as much as possible even if they were willing to do so was seen as morally questionable. In a perfect world, the paying would be divided more equally than concentrating on small minority of big spenders:

“I’d rather take a little bit of money from everyone than a lot of money from a small group of people. That would be kind of a rule of thumb in some sense if you could design a game in a perfect world. But at the moment no such revenue model has been found where you could take a little bit from everyone. Rather it goes fast to the point where you are trying to get as much as you can from a small amount of people so it would cover for the rest who don’t pay for the game.” – AAA, business development manager, F2P: yes

Some professionals compared F2P games to other hobbies. Paying for playing might be cheaper than a night at a bar with friends. F2P games were also compared to other forms of media. Game professionals pondered if games have ethical sides any better than for example the film industry.

However, it was noted that the combination of children and F2P is ethically problematic. The concepts of money might not yet be clear to children. This causes a problem in designing games for such an audience and it causes even a bigger problem for the parents whose device the child is using. Some notions were given about the parents’ responsibility and keeping the passwords safe, so a child could not buy anything without a permission.

It was also noted that at least some of the games are already clearly marketed to adults, and the games can even have age restrictions in their user conditions. To help with for instance parents who let children play F2P games, in-app purchases can be prevented from the settings and some games even remind the users of this possibility. If some product is bought multiple times within short amount of time, one interviewee mentioned that in some cases their game asks for additional confirmation for the purchase for example in the form of a password.

Another case that evoked discussion was spending large amounts of money. It was pondered if spending thousands of euros on a game made the game or the model more unethical. In the end, this issue divided the professionals. Some agreed that spending more than you can afford might be problematic, while others pointed out that amounts are always subjective; what is a big amount for someone could be pocket money for someone else:

“When a player uses tens of thousands of euros in a game, it sounds to me quite odd and unethical, but you have to see it from that person’s point of view. Maybe it’s nothing to him, everything is relative. In my opinion, the ethical question lies in the situation where someone who has a tendency for gambling is used against

his will because he has this tendency.” – AAA, business development manager, F2P: yes

Getting people addicted to a game and paying against their own will was also brought up, but then again, addictive gameplay could also be seen as a positive quality. If the game is addictive, it must be good. On the other hand, using some people’s addictive tendency was seen as unethical. Those who worked with money games or gambling did not see their work as unethical. Because gambling is regulated by authorities, for them it was ethical enough if they just followed the rules set by regulators. Compared to other game companies, gambling companies have more explicit boundaries to guide their development processes. External rules are not necessarily just annoying, but can lead to creative results.

The game professionals do come across some conflicting development solutions. It was hypothesized that in some companies managers could order to put something in the game that the developer would feel uncomfortable with. However, none of the interviewees had been in this situation. Sometimes there had been situations where doing something specific could have brought more profit, but going for the bigger immediate profit would have been a bad decision in the longer run, so it had not been implemented. In one occasion, an interviewee described a situation where he might have implemented an unwise feature if not of the team’s notions:

“Sometimes even I have had slightly contradictory ideas but then someone from the team yelps that no, this is not good. And then I have realized that it’s true, this is without a doubt a bit bad, and then we haven’t executed it.” – mobile, game designer, F2P: yes

When thinking about the solutions to the problem points in ethics, there were many suggestions on how F2P games can be designed in a responsible way. One way is to make it more evident and visible that even though the game is free, it includes voluntary in-app purchases. The game should also state clearly what the player is paying for and what he/she is getting in return. The decision to pay or refuse to pay is then player’s to make.

Restrictions were also suggested as one solution. It was noted that none of the F2P games seem to have any customizable limits for using money, whereas for instance in the gambling world this is usually possible. One suggestion was to catch unusual spending and contact the player if deemed necessary. This kind of player behavior detection and information feedback to players combined with individually binding limit setting is common in responsible gambling policies, especially in online environments. Gambling companies have dealt with similar issues for a long time than what F2P companies are dealing right now. Some of the solutions from responsible gambling policies could be utilized to F2P gaming in order to protect vulnerable groups, whether they are children or adults with gaming addiction.

Future

One way to change the earlier mentioned negative player attitudes is simply time; the belief that attitudes towards F2P games will change to more positive is strong among game professionals. As playing in general will become even more accepted as a hobby and as a part of everyday life, F2P games continue to become more ordinary and commonplace as well. The professionals seem to believe that this happens through “natural” evolution without the need for external regulation.

The professionals agreed that F2P is not going away; they have secured their place in the game industry. At the same time it was believed, or at least hoped, that F2P would not take over the world either and purchasable games would have their place as well:

“Someone might be afraid that all games will turn to the free-to-play model and then there won’t be any big RPGs. But I don’t believe that, I think there will be always buyers and makers for them.” – mobile, data scientist, F2P: yes

There were worries that as people are now used to playing games for free, is there any road back and are the new generations even more unwilling to pay for their games in the future.

The quality of F2P games was believed to get better as players learn not to stick with the bad games. The problems were believed to decrease; it was believed that the most aggressive monetization and worst ethical problems will be in the margin of the phenomenon. The game mechanics for F2P games were expected to become more varied. Game professionals were eager to see for instance how games with strong narratives could use the F2P revenue model without ruining the game experience.

It was believed that these are just the first steps for F2P games. The channels through which these games can be played will become broader and new revenue models will be invented. The less successful models will slowly disappear while the profitable models will stick around. Not just the revenue model, but the whole business model was expected to slowly evolve.

The platforms have had a major role and will have that in the future as well. There was a notion that the way the App Store works currently favors F2P model more than for example free demos with upgradable full games. If the platforms change, the industry is greatly influenced as well.

One hope for the future was that the threshold to pay money inside the game would decrease. This would bring the conversion rate of F2P games to a healthier level. The ways to pay and different purchase options were expected to increase. Franchises and brands were expected to continue to have more significance in the future, and in-game purchases might not be as crucial for the game’s revenue as at the moment.

One hope for the future among the professionals was the diversity of F2P games. At the moment only the F2P game hits make money. Most F2P games are targeted for the masses and the hit games and their mechanics are currently copied aggressively. Game professionals were hoping that in the future the less known F2P games could survive.

“I think we’re in the beginning of this process of growing up, and some have succeeded. And then everybody is copying it. [--] But I think in the future when the situation is more stabilized and the customer base is wider, then we are brave enough to try a bit more exceptional things also.” – mobile, data scientist, F2P: yes

DISCUSSION

The interviewed game professionals had relatively positive attitudes towards F2P games. This is the case even though not all the interviewees are involved in the F2P model in their work. While some professionals had some conflicting or suspicious attitudes, the most negative views discussed within the game professional community elsewhere (Saltsman,

2011) did not emerge from this data. However, the conflicting attitudes suggest that there is something in these games that makes them problematic from some viewpoints.

The mainly positive attitudes of the professionals already in the F2P industry could be explained by the threat of cognitive dissonance. According to Leon Festinger (1956), people aim for internal consistency. Why would you work with F2P games if it was unpleasant or unethical? This psychological distress can be relieved by changing your negative attitude into positive. This could also in part explain the defensive stances the professionals took against critique.

Games are typically designed to be entertaining and fun experiences. F2P games are in a difficult position in this respect, as they need to persuade the player to pay money during game play, even though it would be possible to continue playing for free. Therefore many games deliberately add hindrances or decelerators that can then be skipped with money. These kinds of intentional negative effects for the players are called “dark patterns” (Zagal et al. 2013). Bringing this type of thinking inside games, a form of entertainment, may feel wrong, as one of the interviewees said.

The ethics of having to purchase an expensive game without the option to try it first was questioned multiple times by the game professionals. It was noted that therefore poor games can still make money on the retail side, whereas in F2P the games have to be good to bring revenue. However, purchasing a retail game is rarely done without any knowledge of the game. Word-of-mouth, reviews and demos are important factors when buying a retail game (Callagher, 2011). Furthermore, second-hand sales and discounts push the price lower. On the other hand, being able to acquire the game for free does not guarantee that “poor” games would not acquire revenue (Blumental, 2013).

While aggressive monetization, paywalls and pay-to-win are the usual faults of the model and used as arguments against it, it seems that the game professionals we interviewed, including the F2P developers themselves, agree with these features being negative and try to avoid them in their own games. Instead of characteristics of F2P, it can be speculated that these are the marks of bad (or past) F2P games.

Nonetheless, these marks keep influencing the audience’s views on the F2P games. The interviewees have encountered really negative player attitudes towards the model. It seems at least from the perspective of the professionals that a lot of people still think about FarmVille and Zynga when someone mentions F2P. As the games have developed a lot since the early days, it is understandable that polarized opinions can feel unfair.

Professionals saw relatively few ethical problems with the model compared to how much it has been under discussion concerning the F2P model elsewhere (Saltsman, 2011). There were, however, a couple of points that caused some pondering.

The combination of children and F2P games was seen as a clear problem, which has been brought up by other professionals as well (Engelbrecht Fisher, 2013). In some cases the responsibility of the parents was called for. There have been several cases where a child has used substantial amounts of money without their parents knowing (Curtis, 2013; Martinson, 2013), so the problem is real and should be remedied in one way or another. While games have their share of the responsibility, the platforms are also a center of the problem. Recently, Apple has been forced to offer refunds in cases where the child has

used money without their parents' consent and also forced to change the way the purchases are made on the platform (Federal Trade Commission, 2014).

The second problem point was the high spenders. Is it a problem that someone spends thousands of dollars on one F2P game? This was a question that had no final answer. It was presumed that the situation differs, namely if the spender can afford the loss of money, and if he/she is suffering from addiction or something that is making him/her spend the money. The high spenders, or the "whales", is an issue that has not been yet sufficiently researched. Recently Nicolas Ducheneaut and Nick Yee introduced the results of their study, where they found that whales did not usually make impulse purchases, but rather made rational, long-term decisions with their investments (Sinclair 2014).

The gambling industry has previously dealt with similar issues than F2P today. Responsible gambling policies, programs and tools have been developed to protect vulnerable groups and to provide information to all players (Blaszczynski et al., 2011). Many practices, such as pre-set spending limits, player behavior detection and information providing tools, could be implemented to F2P games technical difficulties. Responsible gaming policies could work even as competitive advantage between F2P companies in player acquisition (Gainsbury et al., 2013).

When discussing the future, the views were positive. The F2P industry was seen to be getting broader, better, and more versatile, but still leaving room for the more traditional revenue models. This view is not unshared, as similar views of the future has been forecasted before as well (Luton, 2013b). The future of F2P games seems bright.

CONCLUSIONS

This paper has investigated the F2P revenue model within the game industry from the perspective of game professionals. We interviewed 14 game professionals from six Finnish game companies about their attitudes towards F2P, presumed players' attitudes, ethics concerning the model and the future of F2P games.

The professionals' attitudes did vary, but generally the F2P model was seen in a positive light. In contrast, when it comes to perceived player attitudes, they were seen as quite negative, sometimes unfairly so. Still, there is a big, silent audience which obviously likes to play these games. F2P games were seen in some ways as ethical as other games and other forms of media, even though they had some characteristic weaker points.

The future of the F2P games seems rather good, both for the developers and the players, as it was believed that both games and attitudes are getting better. However, while the belief in better, more versatile and ethically less dubious games was strong, getting there might not be easy. The F2P developers are in a tight spot: balancing between a fun game and getting revenue and increasing the conversion rate are tough problems to battle with. There are some other clouds in the sky; if the new generations of players get used to free games, will this be the only way to make games in the future?

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ARTICLE

II

Domain-specific playability problems in social network games

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Domain-Specific Playability Problems in Social Network Games

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Abstract. Social network games on Facebook have become a popular pastime for millions of players. These social games are integrated into the social network service and feature a free-to-play revenue model. Design characteristics of social games set new challenges for game design and playability evaluations. This article presents two studies for evaluating playability in social games. Study I features 18 novice inspectors who evaluated a social game with playability heuristics. The objective of the study was to explore possible domain-specific playability problems and examine how the established heuristics are suited for evaluating social games. The results of Study I show that social games' design characteristics can cause specific playability problems and the established playability heuristics are suitable for evaluating social games. Study II features 58 novice inspectors who evaluated 12 social games with playability heuristics. The objective of the study was to confirm the existence of domain-specific problems. As a result, six domain-specific playability problems were found: boring gameplay, click fatigue, interruptive pop-ups, friend requirements, spammy messages and aggressive monetization. This article discusses their meaning for the gaming experience and how they could be fixed.

Keywords: Social Networks, Social Games, Free-to-Play, Playability, Heuristics, Evaluation, Facebook

1 Introduction

Social games, i.e. games played on social network services such as Facebook, attract millions of players (Tyni et al., 2011). These games are mainly based on the free-to-play revenue model in which the game can be acquired and played free of charge. Monetization is realized through micropayments, which allow access to exclusive content and offer faster progression in the game (Tyni et al., 2011). The term “social game” was coined by the game industry and, rather than highlighting the social nature of these games, it emphasizes the gaming platform, the social network service (Hamari and Järvinen, 2011; Järvinen, 2009).

The heuristic evaluation method together with playability heuristics has been used successfully in evaluating games on different platforms (Paavilainen et al. 2011). In heuristic evaluation, the inspectors evaluate the game design and search for problems according to heuristics, which are rule of thumb statements or guidelines (Schaffer, 2008). If the game design violates these heuristics, it can lead to playability problems and diminished enjoyment. Playability heuristics are used to support the evaluation and to help pay attention to certain aspects that are known to have influence on playability (Korhonen, 2011). The heuristic evaluation method has been acknowledged to be a successful method for finding playability problems (Paavilainen et al. 2011).

This article presents the results of two different studies in which novice inspectors did heuristic evaluations on social games. In the first study (Study I), 18 novice inspectors did a heuristic evaluation on the social game *Island God* (Digital Chocolate, 2010) using existing playability heuristics (Korhonen and Koivisto, 2006; 2007). The primary objective was to study social games from the perspective of playability, and to identify possible domain-specific playability problems. The secondary objective was to evaluate how well the established playability heuristics are suited for evaluating design characteristics of social games. The results of Study I revealed that some implementations of social game design characteristics can cause playability problems and they should be conceded. The established playability heuristics are suitable for evaluating social games as they are also able to describe domain-specific problems in them (Paavilainen et al., 2012).

In the second study (Study II), 58 novice inspectors did heuristic evaluations on 12 different social games. The purpose of this follow-up study was to confirm the findings of domain-specific problems from Study I. The results of Study II confirm that domain-specific problems identified in Study I commonly appear in several social game designs, further emphasizing their status as domain-specific. Furthermore, Study II identified three domain-specific problems that were not reported in the results of Study I. Further analysis shows that some of these problems were present in the data of Study I, as well, but were reported only by a few inspectors. These problems should be added to the list of domain-specific problems.

2 Social Game Design Characteristics

To evaluate the playability of social games, an in-depth look on social games design characteristics in theory and practice is needed. By understanding these characteristics, their inherent effect on playability and player enjoyment can be studied. The design values of social games resemble those found in casual games. Kultima (2009) has defined the design values of casual games to be Accessibility, Acceptability, Simplicity and Flexibility. Like casual games, social games are easy to access, featuring acceptable themes and simple gameplay while offering flexibility in regard to different motivations for spontaneous play.

Järvinen (2009) has defined five design drivers for social games: Spontaneity, Symbolic physicality, Inherent sociability, Narrativity, and Asynchronicity. Spontaneity, for example, means that in social games complicated sets of actions are simplified into a single mouse click. Similarly, Inherent sociability opens up possibilities for team formation through the social network (Järvinen, 2009). Ventrice (2009) has defined three objectives for social games: 1) build a persistent society, 2) maintain a consistent sense of discovery, and 3) spread the game virally. Sense of discovery, in this context, means that there is always something new for a player to acquire and experience (Ventrice, 2009).

Paavilainen (2010) has analysed Järvinen's and Ventrice's models and proposed ten initial high-level heuristics for the design and evaluation of social games: Spontaneity, Interruptability, Continuity, Discovery, Virality, Narrativity, Expression, Sharing, Sociability and Ranking. Social games are easy to access and they support sporadic, spontaneous gameplay. They progress continuously and are updated with new content as the game advances. Viral messages are used for acquisition and retention purposes through narratives, which are posted on the social network feeds. Social games support player expression in various ways and provide means for reciprocity in the network. The game mechanics are tied into the players' social network, thereby fostering collaboration and competition between friends.

In practice, social games are continuously updated services rather than stand-alone products (Hamari and Järvinen, 2011) and they can be acquired and played free of charge. The developers are continuously monitoring the players' interaction through metrics and the gameplay is adjusted accordingly, aiming to monetize the players via micropayments and sustain a viral growth in the social network. Through micropayments, the players can progress faster in the game and acquire exclusive content. In regard to the social network utilization and viral growth, the game design tries to attract people who are not currently playing the game. This happens by incorporating players' friends from their social network into the game to play together. Successful games rely on large player bases, as only five to ten per cent of the players will make in-game purchases. (Fields and Cotton, 2012; Luban, 2010)

An example of a common monetizing method is the offline progress mechanic, which comes in two different types; appointment and energy. The appointment mechanic dictates that a player must wait for certain game tasks to be completed, e.g. crops take time to grow before they can be harvested. The player can speed up the growth through micropayments. The energy mechanic works similarly. The player has a certain amount of energy and game actions consume that energy. When all energy is depleted, the player must wait until the energy is replenished or the player can fill in energy resources through micropayments. In some games, the player can alternatively ask friends to help with the

energy refill. Both mechanics funnel the player into in-game purchase decision situations, which are usually prompted with pop-up windows. (Fields and Cotton, 2012; van Meurs, 2011)

Developers also need to pay attention to how the game is played and how the game design encourages players to continue playing the game. Luban (2010) presents a sequence of events that propel the player in a game:

1. The player understands what he or she needs to do in the game
2. The actions can be performed easily
3. The player succeeds in performing the actions
4. The player receives a reward
5. The player discovers short term objectives and knows how to reach them

In addition to these, the game design often creates a continuous loop of tasks, which will attract players to return to the game. If a player does not return and complete the tasks, they may be discarded and the player is not rewarded for her efforts. This will create a need to return to the game regularly and complete the tasks. (Hamari, 2011; Lewis et al. 2012; Luban, 2010)

The aforementioned design characteristics of social games influence the user interface design, and the interface should be easy to understand by different player groups. Main controls usually stand out and are centralized. Navigation is simplified and usually contains less than three navigation layers. Game objectives and progress indicators are also clearly visible on the screen. The challenge of user interface design is that all controls, indicators and game content should be fitted into a small window on the screen as social games run in window mode by default. (Luban, 2010)

Tyni et al. (2011) present a detailed gameplay analysis of the social game *FrontierVille* (Zynga, 2010) and their findings on the effects of free-to-play revenue model, sociability and rhythmic design reflect the aforementioned design characteristics well. *FrontierVille* represents the simulation genre of social games, where a player completes simple quests by building houses, raising livestock, helping friends and doing other tasks, which tie into the game's theme.

3 Playability Heuristics

For the heuristic evaluation, a playability heuristic set that would cover the design characteristics of social games was needed. First, the social game heuristics from Paavilainen (2010) were considered but they were not concrete enough to be used by novice inspectors effectively. Then, some of the well-known playability heuristic sets (Desurvire et al. 2004, Desurvire and Wiberg, 2009), (Korhonen and Koivisto 2006; 2007), (Pinelle et al. 2008; 2009) that have been published in this research domain were reviewed. After the review, the playability heuristics from Korhonen and Koivisto (2006; 2007) were selected for the study as they cover usability, gameplay and multiplayer aspects exclusively (Table 1). It was interesting to note that even though these heuristics have not been designed for social games, most of the design characteristics can be found in these heuristics and their descriptions. In addition, the selected heuristics have been

used, validated and reviewed in several studies (Korhonen, 2010; 2011; Korhonen and Koivisto, 2006; 2007; Paavilainen, 2010; Paavilainen et al., 2011). The selected heuristics are organized into three modules: Game Usability, Gameplay and Multiplayer. The Mobility module from the original heuristic set was left out, as these heuristics were not applicable in this study.

Table 1 Playability heuristics organized in Game Usability (GUx), Gameplay (GPx) and Multiplayer (MPx) modules.

GU1	Audiovisual representation supports the game.	GU7	Control keys are consistent and follow standard conventions
GU2	Screen layout is efficient and visually pleasing.	GU8	Game controls are convenient and flexible.
GU3	Device UI and game UI are used for their own purpose.	GU9	The game gives feedback to the player's actions.
GU4	Indicators are visible.	GU10	The player cannot make irreversible errors.
GU5	The player understands the terminology.	GU11	The player does not have to memorize things unnecessarily.
GU6	Navigation is consistent, logical and minimalist.	GU12	The game contains help.
GP1	The game provides clear goals or supports player-created goals.	GP8	There are no repetitive or boring tasks.
GP2	The player sees the progress in the game and can compare the results.	GP9	The players can express themselves.
GP3	The players are rewarded and rewards are meaningful.	GP10	The game supports different playing styles.
GP4	The player is in control.	GP11	The game does not stagnate.
GP5	Challenge, strategy, and pace are in balance.	GP12	The game is consistent.
GP6	The first time experience is encouraging.	GP13	The game uses orthogonal unit differentiation.
GP7	The game-story supports the gameplay and is meaningful.	GP14	The player does not lose any hard-won possessions.
MP1	The game supports communication.	MP5	The game provides information about other players.
MP2	There are reasons to communicate.	MP6	The design overcomes a lack of players and enables soloing.
MP3	The game supports groups and communities.	MP7	The design minimizes deviant behaviour.
MP4	The game helps the player to find other players and game instances.	MP8	The design hides the effects of the network.

4 Study I – Method

The purpose of Study I was to identify possible domain-specific playability problems that would stem from the design characteristics of social games. Another objective was to evaluate how well the established playability heuristics are suited for evaluating social games.

4.1 Inspectors

The inspector group for Study I consisted of 18 novice inspectors (9 male, 9 female) between 20 and 58 years of age, with an average age of 28.3 years. Ten inspectors had some experience of usability evaluations, mainly from prior university courses. Two inspectors stated having work-related experience, as well, while none of the inspectors had evaluated video games before the experiment. Novice inspectors were selected as they were readily available and their lack of expertise was countered with the sheer number of inspectors and additional training.

The gaming preferences and time spent on gaming varied among the inspectors, and the inspectors represented various different gamer mentalities in casual, social and committed categories (Kallio et al., 2011). Almost all had some gaming experience, as 16 inspectors had played video games at least sometimes. The reported gaming preferences covered all of the most popular platforms and all major game genres, the most popular ones being adventure games, followed by sports games. As social games target a wide audience of people with different gaming backgrounds (or no prior experience in games at all), the variability among inspectors is seen to be beneficial.

The inspectors' experience with social games was much scarcer than in video games in general. Eleven inspectors had never played social games before the experiment, and one inspector had only tried them out once. Among the six inspectors who played social games, the most popular games were *FarmVille* (Zynga, 2009) and *FrontierVille*. The inspectors had no previous experience with the game evaluated in Study I.

4.2 The Social Game Evaluated

The game evaluated, *Island God* (Figure 1), is a free-to-play tribe simulation game on Facebook. The game was selected because, at the time of the study, it was one of the newest social games, the inspectors had no experience of it, and the initial examination suggested that there would be discoverable playability problems. *Island God's* gameplay and design characteristics also resemble *FrontierVille* and other highly popular social games, like *FarmVille*, *CityVille* (Zynga, 2010) and *CastleVille* (Zynga, 2011). *Island God* uses offline progress mechanics similarly to these games. The primary offline progress mechanic is energy-based and the appointment mechanic is used as a secondary mechanic for completing time-consuming tasks like chopping wood, cutting rocks and worshipping the god.

Figure 1 *Island God* in full screen mode



In *Island God*, the player acts as a god on an island with the purpose of expanding the island, increasing the number of worshippers, and perfecting the island with buildings, totems and other decorations. The player can play as a good or an evil god, depending on whether she blesses or smites her minions. Thematically, the game borrows these conventions from the classic god game *Populous* (Bullfrog, 1989) and, like the aforementioned social games, *Island God* is played on an internet browser and uses Flash technology.

The player has an axonometric perspective into the game world and the game is controlled by mouse. Being a free-to-play game, it features micropayments for exclusive content and gameplay accelerators for progressing faster in the game. The game is designed to funnel the player into situations in which the player is encouraged to pay micropayments or virally spread the game in her social network.

The versatile functions of the social network platform are used extensively in the game design. Players can visit their friends' islands and do various chores to help them out. The players are also able to send gifts to both playing and non-playing friends. The game emphasizes reciprocity by suggesting the player to "send a gift back" when the player receives a gift. Sending gifts to non-playing friends works as viral marketing, as the non-playing friends can become playing friends by clicking the gift link. A player's achievement narratives, such as gaining new levels, can be posted on the Facebook wall, which aims to elicit curiosity among non-playing friends, thus luring them to install the game on their account.

4.3 Procedure

Before the inspection of the game, the inspectors participated in two 90-minute lectures on the heuristic evaluation method and two four-hour workshops where they acquired hands-on experience of conducting heuristic evaluation on website interfaces and video

games. In the second workshop, the inspectors evaluated a city management game *EnerCities* (Paladin Studios, 2010). This practice evaluation was done with the same heuristics as used in the study, alongside the white paper that describes the heuristics in more detail (Koivisto and Korhonen, 2006).

EnerCities resembles *Island God* to some extent as both games run in a browser, use a similar axonometric perspective and focus on management tasks with a similar control scheme. *EnerCities* is not purely a social game, though it can be played on Facebook and it features minimal viral aspects (e.g. posting scores to the player's wall). *EnerCities* is completely free and does not feature micropayments or offline progress mechanics. The heuristic evaluation of *EnerCities* was considered a success as the inspectors found and discussed 54 unique playability problems, but the results of this training workshop are not in the scope of this article.

The inspection of *Island God* was given as a home assignment to the inspectors and they were instructed to play the game for approximately two hours during one week. Due to offline progress mechanics and other design characteristics of social games (Järvinen, 2009; Tyni et al., 2011; van Meurs, 2011), it was crucial that the inspection consisted of several play sessions during an extended period of time. On average, the inspectors reached levels 7 or 8 by the end of the study. There were no specific scenarios given, instead the inspectors were instructed to play the game according to the in-game tutorial and later on freely as they wished. The inspectors were instructed to write down all playability problems encountered and assign violated heuristics to these problems.

After the evaluation reports were returned, three meta-evaluators analysed the findings together. The meta-evaluator group consisted of one method expert, one domain expert and one double expert. The analysis of the playability problems was based on the descriptions that the inspectors provided. Problems were verified by playing and studying the game and mutually agreeing on the violated heuristics. The meta-evaluators studied the descriptions of the heuristics (Koivisto and Korhonen, 2006) and used their own expertise on similar types of problems. The meta-evaluators categorized 169 reported issues, and identified 50 unique playability problems and all of them were assigned with one violated heuristic. The ability to find descriptive heuristics is an indication that the heuristic set covers the design characteristics of social games.

As Study I was the first evaluation study on social games using playability heuristics, only one game was evaluated. To ensure that the established playability heuristics are applicable for the evaluation, the secondary objective of Study I was to evaluate how well they are suited for evaluating social games.

5 Study I – Results

This section will focus on the seven most common playability problems found in *Island God* (Table 2) in detail to see what kinds of problems the inspectors found and what playability heuristics were used to describe them. The problems and how the violated heuristics were assigned to the problems will be analysed. The seven problems were reported by at least 27% of the inspectors (5 out of 18) and the two most common problems were reported by 10 out of 18 inspectors (55%).

Table 2 A list of the most common playability problems found in *Island God*. The color emphasis is based on category of the problem.

No.	Problem Title	Found by	Assigned Heuristics by the Inspectors (number of inspectors in parenthesis)		Meta-evaluator Heuristic
#1	Boring Gameplay	10	GP8 (10)	GP5 (1)	GP8
#2	Interrupting Pop-Ups	10	GU1 (1) GU2 (2) GU8 (1)	GU12 (1) GP4 (1) Unassigned (4)	GU6
#3	No Difference between Good and Evil	8	GU5 (1) GU9 (1) GP2 (1) GP7 (1)	GP9 (2) GP10 (2) GP13 (1)	GP10
#4	Selecting Overlapping Objects is Difficult	7	GU1 (1) GU2 (2)	GU8 (3) Unassigned (1)	GU1
#5	Help Unavailable	7	GU12 (7)		GU12
#6	Awkward Cursor Interaction Mode	6	GU6 (1) GU8 (4)	GU10 (1)	GU6
#7	Friend Requirements	5	GP4 (1) GP5 (1) GP8 (1)	GP10 (1) GP11 (3) GP12 (1) MP6 (1)	MP6

5.1 Boring Gameplay

Ten inspectors considered that the game features boring tasks and quests, which in turn lead to boring gameplay. Similar tasks repeated over and over again like lighting up torches and gathering massive amounts of resources for no apparent reason. The violated heuristic was assigned consistently and both the inspectors and the meta-evaluators concluded that it is GP8 “There are no repetitive or boring tasks”.

One inspector additionally assigned GP5 “Challenge, strategy, and pace are in balance” to describe the problem but the lack of balance in challenge, strategy or pace is actually the consequence of repetitive and boring gameplay, and the analysis of the heuristic descriptions support the selection of heuristic GP8.

5.2 Interrupting Pop-Ups

Ten inspectors felt that the constant pop-ups, which act as a funnel to monetize or distribute the game virally, were disturbing the gameplay. The pop-ups appeared frequently and caused frustration, as they must be addressed before continuing gameplay. The meta-evaluators agreed with the inspectors that the pop-ups were problematic and required an unnecessary navigation step. Therefore, the violated heuristic was assigned to be GU6 “Navigation is consistent, logical and minimalist”.

Assigning the violated heuristic to describe the problem was a tricky task. Four inspectors left the violated heuristic unassigned and six inspectors assigned a different heuristic than the meta-evaluators. The assigned heuristics were related to both Game Usability and Gameplay categories. One inspector assigned two violated heuristics; GU2

“Screen layout is efficient and visually pleasing” and GP4 “The player is in control”. Other inspectors suggested heuristics GU2, GU1 “Audio-visual representation supports the game”, GU8 “Game controls are convenient and flexible”, GU12 “The game contains help” and GP12 “The game is consistent”.

None of these heuristics address the problem according to the heuristic descriptions. GU1 and GU2 describe problems related to audiovisual aspects in the game world and in the user interface. GP4 and GP12 are gameplay heuristics related to player control and consistency of the game and therefore do not describe this game usability problem accurately. Assigning GU12 to describe the problem was probably an unintentional mistake because the problem and the heuristic have no resemblance.

5.3 *No Difference between Good and Evil*

Eight inspectors reported that although the player can choose to do good or evil deeds, it has no meaning in the game. These acts have an effect on morality points, but the inspectors did not experience any influence beyond that in the gameplay. The inspectors were left unsure if there is a real difference between the two paths. Based on the heuristic descriptions, the meta-evaluators assigned the violated heuristic GP10 “The game supports different playing styles” for the problem.

Two inspectors assigned the violated heuristic congruently with the meta-evaluators. Other suggested heuristics were GU5 “The player understands the terminology”, GU9 “The game gives feedback on the player’s actions”, GP2 “The player sees the progress in the game and can compare the results”, GP7 “The game story supports the gameplay and is meaningful”, GP9 “The players can express themselves” and GP13 “The game uses orthogonal unit differentiation”.

As the problem descriptions revealed that the inspectors felt unsure of whether or not good or evil deeds had any influence in the game or what they actually meant in the game, they assigned heuristics GU5 or GU9 to describe the problem. However, as this is primarily a gameplay problem, heuristics addressing game usability issues should not be used to describe it.

The rest of the suggested heuristics are related to gameplay, but they do not describe the problem accurately either. GP2 refers to an issue that the game should show the player’s progress and present it either explicitly or implicitly. In this sense, constant behaviour as a good or an evil god should be visible to the players. This is actually manifested through the morality point indicator, but it has no clear influence on the gameplay. The heuristic GP7 could be justified as the game world indicates the possibility of being good or evil in the game, but there is no narrative story to support such behaviour. GP9 is a somewhat reasonable choice, but it describes what happens after the problem occurs, i.e. the players cannot express themselves by being good or evil. GP13 refers to the game entities that a player can manipulate in the game and not the thematic role of the player.

5.4 *Selecting Overlapping Objects is Difficult*

Seven inspectors reported difficulties in selecting graphical objects in the game world as they overlap or are close to each other. Items and minions tend to get behind trees and

sometimes the inspectors had to remove trees out of the way, which was considered tedious and a waste of the energy resource. The meta-evaluators concluded that the violated heuristic GU1 “Audio-visual representation supports the game” describes the problem accurately.

One inspector assigned the same violated heuristic as the meta-evaluators. Three inspectors assigned heuristic GU8 “Game controls are convenient and flexible” to describe the problem. Two inspectors selected GU2 “Screen layout is efficient and visually pleasing” and one inspector left the violated heuristic unassigned.

Heuristic GU2 refers to the layout of user interface components on the screen and not to the game world objects. Assigning the heuristic GU8 to the problem is an example of mixing up the cause and the effect of the problem as, although the overlapping game objects are hard to select, it is not because of inconvenient game controls, but because of the game’s visual representation.

5.5 *Help Unavailable*

Another playability problem that was consistently reported by seven inspectors was the absence of in-game help. For example, the inspectors were not able to find help to explain how to acquire certain resources or how using the good or evil god power affects the gameplay. All the inspectors and the meta-evaluators agreed congruently that the violated heuristic is GU12 “The game contains help”.

The developers added in-game help later after the experiment and there was a dedicated user interface component to access the help directly.

5.6 *Awkward Cursor Interaction Mode*

Six inspectors considered the cursor interaction mode in the game problematic. The default mode selects and activates objects in the game world. When building new constructions in the game world, the cursor changes to a silhouette of a building and the mode is active until a player has finished the task. However, there was no obvious way to revert back to selection mode. During the study, the inspectors found a loophole where setting up the building into an illegal building area, e.g. on the ocean, would change the cursor interaction mode back to the default mode, thus cancelling the construction. The meta-evaluators concluded that the violated heuristic was GU6 “Navigation is consistent, logical and minimalist”, because the user interface requires illogical steps to change the mode.

One inspector assigned the violated heuristic congruently with the meta-evaluators. Four inspectors assigned GU8 “Game controls are convenient and flexible” and one inspector assigned GU10 “The player cannot make irreversible errors”. GU8 does not describe the problem well, because the problem does not stem from the game controls, but from the navigation interaction. The heuristic GU10 is related to consequences of the cursor mode, as the player might accidentally set up unwanted buildings.

Later on this problem was addressed by the developers by adding a user interface component for changing the cursor interaction mode.

5.7 Friend Requirements

Five inspectors felt that the game stagnates if the player does not have enough friends in the game. For example, finishing certain buildings becomes difficult and the game stagnates if the player does not have friends who can send the required items to complete the construction. The meta-evaluators agreed that the heuristic MP6 “The design overcomes lack of players and enables soloing.” describes the problem accurately.

One inspector assigned the heuristic congruently with the meta-evaluators. Two inspectors suggested GP11 “The game does not stagnate”, one suggested GP4 “The player is in control” and the last one suggested multiple heuristics; GP5 “Challenge, strategy, and pace are in balance”, GP8 “There are no repetitive or boring tasks”, GP10 “The game supports different playing styles”, the aforementioned GP11 and GP12 “The game is consistent”. Again, GP11 represents the effect, not the cause, of the problem. The design prevents progress without friends, thus resulting in a stagnated game as progress is halted. GP10 could be considered as the violated heuristic, if playing without friends was considered to be a playing style per se. The rest of the suggested heuristics do not reflect the problem accurately.

6 Study I – Discussion

Based on the findings of Study I, social game design characteristics can cause playability problems when implemented in their current form. In *Island God*, these design characteristics were implemented in such a way that they disturbed the gameplay, thus causing playability problems to appear. The problems presented in the previous section reveal that three of them emerge from the design characteristics of social games, making these problems domain-specific. These three playability problems, namely “Interrupting Pop-Ups”, “Boring Gameplay”, and “Friend Requirements”, cover all the evaluated heuristic categories: Game Usability, Gameplay, and Multiplayer.

The four Game Usability problems were related to pop-up dialogs, overlapping graphical objects, missing help and cursor interaction modes. The pop-up dialogs are used in many social games to induce the player to pay micropayments or to execute viral actions such as sharing points or inviting friends to play. If the game relies heavily on the use of pop-up dialogs, this may become a playability problem as these dialogs constantly interrupt the player’s interaction flow with the game. In *Island God*, the pop-up dialogs were used for key gameplay events (e.g. when levelling up) and they also appeared at regular intervals on their own. From a broader design perspective, pop-up dialogs are generally frowned upon as they interrupt the user and demand additional interaction (Palmer, 2005). As these pop-up dialogs stem from the free-to-play model due to the need for monetization and virality (Tyni et al., 2011), it can be stated that this is a domain-specific problem in social games.

The problem with overlapping graphical objects is common in social games. For example, all of the popular simulation games (*FarmVille*, *FrontierVille*, *CityVille*, *CastleVille*) suffer from the problem as they feature a similar axonometric perspective as *Island God*. As these types of games have a lot of clickable content fitted into a small space, it is inevitable that graphical objects get hidden behind each other. As the games have evolved, developers have added more content as well as more impressive graphics

and animations, which have made this problem even more evident. The problem lies in the axonometric perspective, which represents a 3D world on a 2D plane. In a true 3D world, the problem could be overcome with a change of the viewing angle, but none of the aforementioned games feature such an option, as they are not true 3D worlds. Many social games allow the player to rotate or move objects, but this does not fix the problem. As the problem originates in the perspective type and how the game world is represented, it cannot be stated that it is domain-specific per se. However, it is notably common among social games as the axonometric perspective is a more casual and smoothly running alternative to a true 3D world with possibly an even more complex interaction scheme.

It was a bit surprising that so many inspectors saw the missing help as a playability problem. Social games often follow the design value of Simplicity (Kultima, 2009), which means that the gameplay mechanics are easy enough to be understood by playing the tutorial. It is possible that some of the inspectors looked for the help section because there is a heuristic referring to it, not because they needed help themselves. However, some of the inspectors did mention not finding specific information that they were seeking, suggesting that there was a lack of information in the game. After Study I, the developers added a separate help section to the game. The missing help is not a domain-specific problem and many social games have separate help sections.

The cursor interaction mode problem has its roots in the development technology. *Island God*, like many other social games, is based on Flash which allows for a very simple control scheme, usually restricted to moving the cursor on the screen and left mouse click for selecting objects and executing tasks. If the gameplay features more complicated tasks, there is a need for a toolbar where the appropriate cursor mode can be (de)selected. This feature was also implemented later into the game. Solving this problem with an additional user-interface element brings up a trade-off situation as the more complex interaction possibilities reduce the accessibility of the game. Another option would be the use of right click to cancel actions, but this is not possible with Flash as, by default, it opens up the Flash menu. As this problem stems from the features of Flash, it cannot be seen as a domain-specific problem.

Two Gameplay problems were related to boring gameplay and indifference of being good or evil in the game. Social games tend to be simple and repetitive, which leads to loss of interest in the gameplay. This can be examined from two perspectives. First, social games' development cycle to initial launch is very short when compared to traditional video games (Baraf, 2010). This means that there is less content and complexity in these games. Second, there is the trade-off between accessibility and depth. As social games try to appeal to a very broad and heterogeneous audience with different skill levels, the learning curve and the threshold to play must be low. The free-to-play model and social network integration force the developers to aim their game to mass audiences to create viable revenue streams (Luban, 2010). Thus, the game cannot be too complex or it loses its casual nature, the design values of Accessibility and Simplicity (Kultima, 2009). The overall simplicity and boring gameplay can be seen as a domain-specific problem for social games as it is interlinked closely with the design characteristics (Järvinen, 2009; Luban, 2010; Paavilainen, 2010; Ventrice, 2009) and this has been acknowledged by others, as well (Bogost, 2010; Kuchera, 2012; Sheffield, 2011; Steinberg, 2011). However, simplicity does not automatically mean boring gameplay, as games like *Chess*, *Mahjong*, *Solitaire* and *Tetris* (Pajitnov, 1984) can prove.

These classic games offer simple game mechanics but they also offer variable challenge levels and emergence, which results in good replay value.

The lack of difference between good and evil arises from *Island God's* narrative and gameplay features, which imply that there are two sides to choose from. Although this is not a domain-specific problem, it does stem from the simplicity and shallow content of social games (Steinberg, 2011). Furthermore, as social games are typically published quickly and evolved while online, it is possible that this feature of the game was meant to be developed further later on, or the players were not able to reach high enough levels to see the differences.

The one Multiplayer problem related to playing without friends is a domain-specific problem. Social games aim for viral growth and they include features that encourage recruiting friends to play the game (e.g. Luban, 2010; Tyni et al., 2011). If a player does not have enough playing friends, the game progresses slowly or requires money to advance. It may also mean that the player has to send requests to friends in order to advance. This feature in social games has received critique in more recently published social games, as well (Kuchera, 2012).

The results provide interesting findings regarding the use of established playability heuristics for finding playability problems in social games. The 18 inspectors found a total of 50 unique problems from *Island God* and the coverage of the playability heuristics to describe the problems was good as the meta-evaluators were able to assign a single violated heuristic to all unique problems. Although the inspectors sometimes had difficulties in analysing the problems, the meta-evaluators were able to either confirm or correct the inspectors' analysis and the playability heuristics clarified the reasons for the problems.

For some problems, assigning a violated heuristic was straightforward as the identified problem and a playability heuristic description were similar. This was seen in problems #1 and #5 (Table 2) in which the inspectors and the meta-evaluators assigned the violated heuristic consistently.

The difficulties in describing the problems using playability heuristics can be seen in two different cases. In the first case, considering problems #2 and #6, the problems were more difficult for the inspectors as the assigned heuristics varied and usually did not correspond to heuristics that the meta-evaluators finally assigned. Both of these problems required an in-depth analysis of the problem and knowledge of the heuristics. Especially difficult was problem #2 about constant pop-ups, which caused additional navigation steps for a player.

In the second case, the inspectors had difficulties in differentiating between the cause and effect of the playability problem. This was especially visible with problems #3, #4 and #7 where the inspectors assigned heuristics, which addressed the consequence of the problem and not the actual problem itself. For example, in problem #4, some inspectors focused on the difficulty of clicking the right object. However, the problem originated from the game's visual representation as the objects overlap each other due to the axonometric perspective.

It was surprising to find out that the inspectors had difficulties in interpreting the playability problems and analysing the root cause of the problems. This is a known challenge for analytical inspection methods and it has been referred to as an evaluator effect in the literature (Hetzum and Jacobsen, 2001). The evaluator effect might originate from multiple reasons such as evaluation expertise of the inspectors, but it might also be related to the inspectors' cognitive styles (Ling and Salvendy, 2009). It is

also possible that such interpretation problems are more common in game evaluations than in other products because both the gameplay and the user interface influence how a problem appears and makes it more difficult for inspectors to judge what is the cause and what is the effect of the problem found. Addressing a problem with violated heuristics from both the Game Usability and the Gameplay categories is a clear indication of this because playability problems usually originate either in the user interface or gameplay, but not both. In previous studies, playability experts typically assign only one violated heuristic to describe the problem (Korhonen, 2011; Paavilainen et al. 2011) and the meta-evaluators in this study were able to do the same.

Although the inspectors had difficulties analysing the problems, they were able to find a substantial amount of playability problems by playing the game. This indicates that novice inspectors are able to find problems, but experts are needed to understand the problems thoroughly as novice inspectors lack analytical expertise.

The social games domain sets new design challenges as the players can pick up and discard games easily and free-of-charge. In this kind of an environment, ensuring good playability is important from the perspectives of acquisition, retention and monetization of players. Study I has shown that heuristic evaluation with established playability heuristics has potential for finding and analysing playability problems in the social games domain, and thus they were chosen to be used in Study II, as well. Being an agile and cost-effective (Schaffer, 2008) qualitative method, it is well suited for the fast development cycle of social games.

7 Study II – Method

The purpose of Study II was to confirm the findings of Study I in regard to the domain-specific playability problems. To achieve this goal, Study II featured more inspectors and more games to achieve better reliability, validity and generalizability.

7.1 Inspectors

Study II featured 58 novice inspectors (35 male, 23 female) who were between 20 and 37 years of age, with an average age of 26.7 years. Two inspectors had previous experience in formal evaluation of video games. Most of the inspectors (50 out of 58) had experience in playing various video games on a PC, a console or mobile platforms.

Similarly to Study I, roughly one-third of the inspectors (18 out of 58) had notable experience with social games, and the majority of the inspectors had not played them at all. Among those who had played social games, the most common titles were *FarmVille* and *Mafia Wars* (Zynga, 2008).

7.2 The Social Games Evaluated

In Study II, 12 social games were evaluated between December 2011 and December 2012. The selected games were chosen based on their popularity and/or novelty at the time of the evaluation. The selected games also represent a broad spectrum of social games and they are different in gameplay. A summary of the evaluated games is

presented in Table 3. The games are described by their genre, theme, type, perspective and the number of inspectors who evaluated the games.

Table 3 A summary of social games evaluated in Study II. The color emphasis is based on the type of the game.

Game	Genre	Theme	Type	Perspective	Inspectors
A	Strategy	Turn-based warfare	Mid-core	Top-down	4
B	Action	RPG Combat	Mid-core	Axonometric	5
C	Simulation	Castle building	Casual	Axonometric	4
D	Simulation	Life simulator	Casual	Axonometric	5
E	Action	Treasure hunting adventure	Casual	Axonometric	4
F	Match-three puzzle	Bubble shooter	Casual	Side	6
G	Action	Western RPG	Mid-core	Axonometric	6
H	Hidden object	Mystery puzzles	Casual	1 st person	4
I	Action	Turn-based combat	Mid-core	Side	6
J	Trivia	Music quiz	Casual	Side	4
K	Strategy	Real-time warfare	Mid-core	Axonometric	4
L	Simulation	Well-being	Casual	Axonometric	6

Categorizing games into different genres and themes can be challenging. Therefore the definitions here are approximates. Moreover, the games have been categorized into two main types: *casual* and *mid-core*. In this study, casual games have simpler game mechanics and gameplay than mid-core games. There are discussions in the game industry on the differences between casual and mid-core social games (e.g. Goslin, 2013; Strauss, 2012; Warman, 2012), but in this study, they are used to indicate that both types of games are included in the study. The perspective defines how the game world is projected for a player and many of the selected games feature an axonometric perspective similar to *Island God* in Study I. Game H featured two different perspectives, but the 1st person perspective can be considered to be the dominant perspective in the game.

The social games evaluated in Study II conform to the design principles presented in chapter 2. The games integrate the social network for play purposes and offer exclusive content through micropayments. Games A and B are not available anymore as they have been closed down by the game companies.

7.3 Procedure

The Study II procedure was similar to Study I in regard to the inspector training and evaluation processes. The inspectors received training for two 90-minute lectures and two evaluation workshops. For training purposes, the inspectors evaluated the game *EnerCities* as in Study I. As Study II features multiple social games, the inspectors chose the game they were interested in and each inspector evaluated one game. Each game was evaluated by four to six inspectors as indicated in Table 3. There were two instances

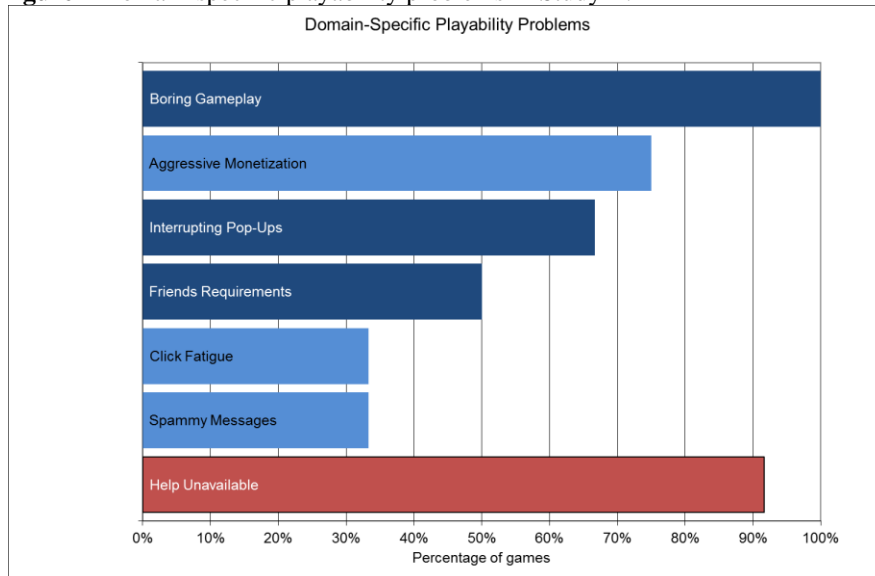
where the inspector was already familiar with the game she evaluated. However, after reviewing the evaluation data, it was concluded that the data from these two inspectors was not skewed or biased in any way considering the goal of this study.

The inspectors reported a total of 797 playability issues, which were analysed by the three meta-evaluators. Based on the analysis, 614 issues were identified as actual playability problems and 183 issues were categorized as false positives, software bugs or platform dependent errors. The playability problems were arranged into problem categories, which described the nature of the problem. The meta-evaluators looked specifically for the domain-specific problems that were identified in Study I.

8 Study II – Results

The results of Study II show that the domain-specific playability problems found in *Island God* are also appearing in other, newer social games. From the 12 evaluated games, each game featured one or more domain-specific problems that were identified in Study I. Figure 2 presents a summary of these problems and their frequency in the evaluated games. The domain-specific problems were “Boring Gameplay”, “Interrupting Pop-Ups” and “Friend Requirements” (indicated as dark blue bars in the graph). Furthermore, Study II revealed new candidates for domain-specific problems (indicated as light blue bars in the graph), which were not reported in Study I. The “Help Unavailable” problem was also discussed, as it was commonly found in most of the games, although it is not considered to be domain-specific.

Figure 2 Domain-specific playability problems in Study II.



“Boring Gameplay” was the most common problem and it was found in all games evaluated in Study II. This particular problem was also easily detectable as 32 out of 58 inspectors reported the problem, and in three games (*E*, *K*, *L*) all inspectors reported this problem. “Interrupting Pop-Ups” were reported in two thirds of the games by 16

inspectors. In game A, this problem was reported by all inspectors and in game L, it was reported by four out of six inspectors. The third domain-specific problem, “Friend Requirements”, was reported by 11 inspectors in six games.

In addition to these three domain-specific problems found in Study I, the meta-evaluators identified three new problems that stem from the design characteristics of social games: “Click Fatigue”, “Spammy Messages” and “Aggressive Monetization”. The first two problems can be considered as sub-types of the “Boring Gameplay” and the “Friend Requirements” problems. The third new problem, “Aggressive Monetization”, resembles the “Friend Requirements” problem and it was often reported in similar situations (e.g. either invite friends or pay money to continue to play). However, it was considered as a separate problem because there are clear design characteristics of social games leading to this problem.

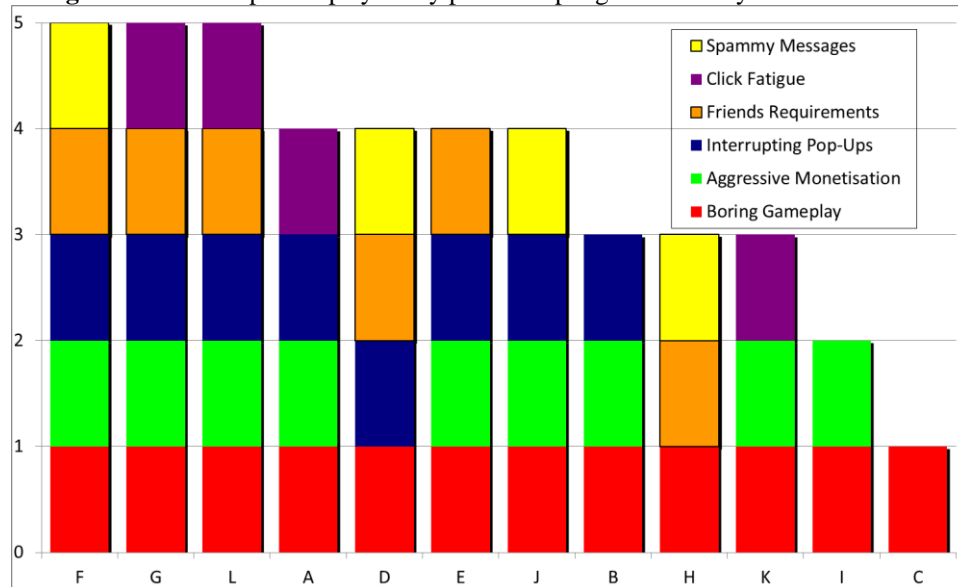
“Click Fatigue” is related to boring gameplay and it comes up when a player has to tend the game world by clicking different items for numerous times. As the game progresses, the number of interactive game items increases and the time required of the player to go through these items increases correspondingly. The inspectors reported several times that continuous clicking is tedious, frustrating and not very rewarding. The problem is relevant to certain genres of social games, namely strategy and simulation games.

The “Spammy Messages” problem includes postings on the player’s wall about different game achievements such as levelling up, completing a quest, or sending requests to playing friends. Some inspectors considered this intruding as the messages would make their Facebook profile look crowded or that posting to friends’ profiles was intrusive. There could be several messages posted during a single play session. It should be noted that this problem was not considered very serious as only five inspectors reported this problem in four games. However, it can be considered as a domain-specific problem because it currently only appears in social games and it is related to the viral marketing and retention of the game inside the social network.

“Aggressive Monetization” can be considered as a new domain-specific problem as it is mainly related to the design of social games and the free-to-play revenue model. In all evaluated games, possible actions of the players are limited by the offline progress mechanics as explained in chapter 2. After re-examining the Study I data, it was found that the “Aggressive Monetization” problem was also mentioned by the inspectors in Study I. However, it was not reported in the Study I results because only three inspectors mentioned real money use while describing another problem related to pop-up windows or friend requirements. In Study II, 16 inspectors reported this problem in 9 out of 12 games.

Another evidence of the domain-specificity of playability problems is their frequency in different social games. In Study II, 83% of the games (10 out of 12 games) featured three to five playability problems categorized as domain-specific (Figure 3). From this point of view, game C was the best designed game because the inspectors reported problems only related to the “Boring Gameplay” category. Game I succeeded fairly well in avoiding most of the domain-specific problems as well; only the “Boring Gameplay” and the “Aggressive Monetization” problems were reported in the game. All other games featured multiple domain-specific problems.

Figure 3 Domain-specific playability problems per game in Study II.



In addition to the domain-specific problems, one particular playability problem was commonly reported. 41 out of 58 inspectors reported playability problems related to help issues. The problem was also very widely spread as 11 out of 12 games (91.7 %) had these problems (see Figure 2). Depending on the game, the inspectors would like to have known how certain game items worked, how a specific task could be done or what the role of two different currencies was. Sometimes there was no in-game help at all, only a link to the game's forum, which was considered to be an awkward method for accessing help.

9 Study II – Discussion

Study II confirms the findings of Study I in regard to the domain-specific playability problems in social games. In addition, new domain-specific problems were discovered. Based on our findings, social games suffer from 1) boring gameplay, 2) click fatigue, 3) interruptive pop-ups, 4) friend requirements, 5) spammy messages and 6) aggressive monetization.

One problem, “Boring Gameplay”, was found in all evaluated games. It was also the most common domain-specific problem found in Study I. As stated earlier in the discussion on Study I, this is a design trade-off between accessibility and depth. Fixing this problem would require more versatile game mechanics along with player progression through levels. Implementing static content does not fix the problem, as it has no real effect on gameplay and playability (Fabricatore et al., 2002).

The problem of “Click Fatigue” is caused by an overwhelming demand for players to take meaningless actions. Typically, players need to react to every state change in the game world by clicking game items. Most of the clicks are confirmations of a previously planned chain of actions, which the player must do to finish a task. These tasks could be

automated to some extent, thus reducing the need for tedious clicking. In some social games, items can be picked up automatically or by pointing at them with the cursor. Also, some games try to overcome this problem by selling accelerators, which provide convenience by making tending the game world easier and faster, but these actions are usually behind a pay wall. Another method is to build a meta-game around clicking to make it more bearable (Smith, 2012). Adding such incentives for clicking has made social games “Click & Reward” games (Söbke et al., 2012), which has resulted in social satire games, such as the *Cow Clicker* (Bogost, 2010).

The “Interrupting Pop-Ups” problem could be approached by more subtle means for acquiring the players’ attention without interrupting the gameplay. Whereas pop-ups force the player to react and interrupt the play, an ambient approach might be more suitable. The UI design could feature a message area where various messages would be presented with a sound cue. Similar designs are present in social games quest management, where quest notifications pop up on the left side of the screen and clicking them opens up a dialog. The number of the pop-ups can also be disturbing. Especially if the player has not played for a while, there can be several pop-ups appearing before the player gets into the actual gameplay (Henning, 2010). This is partly due to the nature of social games - they evolve rapidly, and there can be a lot of new features that have to be introduced for the returning player. In this case, older news could be stacked or left out and only the newest or most important ones shown to the player.

The “Friend Requirements” problem is almost hard-coded into the social network integration and the free-to-play revenue model in the design of social games. As the conversion rate from free player to paying player is relative low, there needs to be a large player population to make the game profitable. The actual sociability in social games is rather low (Brightman, 2012; Paavilainen et al., 2013) thus inviting friends to play the game has only external value as the progress is halted or severely slowed down when playing without friends. Instead of forcing players to add friends to be able to proceed, the games should build intrinsic motivation for asking friends to play, something that actually makes a difference in the gameplay (Swallow, 2013). This could make getting friends to play the game into a positive experience rather than something that players must do involuntarily.

Before Facebook policy changes significantly reduced the visibility of game-related posts among non-playing users, the “Spammy Messages” problem was more severe. The consequences of the policy change were evident in game industry discussions (von Coelln, 2009; 2010). Despite the change, there are players who find sending requests or wall posts awkward. As the role of requests and wall posts has switched from virality to retention (von Coelln, 2009; 2010), it could be beneficial to lower the instances of these actions and offer better incentives for doing so. Considering requests, one solution would be to streamline the send and accept interaction into the game user interface as currently these actions take time and interrupt the gameplay. Then again, there will always be those who do not want to request, send or receive anything. In another study, “Spammy Messages” was considered as the most irritating problem along with “Boring Gameplay” (Paavilainen et al., 2013). It can be argued that as the messages are in the Facebook feeds and not inside the games, they are not part of the gameplay. However, as the messages are intertwined into the game mechanics and the social network integration, we believe them to be an integral part of the gameplay, which is a specific feature of the social games domain.

The “Aggressive Monetization” problem stems from the free-to-play revenue model of social games. As revenue must be created, as many non-paying players as possible need to be funnelled into paying customers. Sometimes the advertising of the paid content is quite aggressive and limits playing. The game should still be fun for both paying and non-paying players, as it is in the end the non-paying players who create the sense of community for the game (Sotamaa et al., 2011; Tyni et al. 2011). Järvinen (2012) has stated that social games design is tricky and that the games should be designed to “pay to win, grind to compete”. But how much grinding (i.e. doing repetitive tasks over and over again) should there be? This opens up other questions on how monetization and viral actions could be more subtle, but still achieve their goals from the business perspective. Some designers emphasize long-term retention, which is achieved through fun gameplay that builds an intrinsic motivation to play (Swallow, 2013).

Currently, the amount of paying players still remains low in social games, and the main income comes from a small percentage of “whales”, players who spend considerable amounts of money on the game (Fields and Cotton, 2012; McWilliams, 2013). This might be the consequence of following metrics to maximize the income, and an aggressive monetization strategy might seem to work best. However, this strategy has gained criticism inside the industry (McWilliams, 2013, Swallow; 2013) and the bigger challenge is thought to be retention rather than monetization (Nutt, 2012). It might be that the game companies are primarily interested in short-term profits (Swallow, 2013) and there is no patience to monetize slowly through strong retention. In such a case, shallow gameplay and aggressive monetization is a sure way to drive potential payers away.

Interestingly, the “Help Unavailable” problem was common in both studies. Although it is not considered to be a domain-specific problem, the mere frequency justifies its mention here. This raises questions about the accessibility of social games: are they as easy to understand as they are thought to be? If the player does not understand the gameplay, achieving long-term retention might be difficult. This question requires further investigation in the social games playability research.

The next phase of this research is to study the need for a social-games specific heuristics module to accompany the original set. Study I suggested that such heuristics are not needed, but Study II suggests otherwise. Although the “Click Fatigue” problem can be traced to the same heuristic as “Boring Gameplay” (GP8 “There are no repetitive or boring tasks”), the problems “Spammy Messages” and “Aggressive monetization” do not currently have an equivalent heuristic. “Spammy Messages” is related to the integration of the gameplay and the social network whereas “Aggressive Monetization” is related to the integration of game design and the free-to-play revenue model. Both playability problems can have a detrimental effect on the game experience, thus their implementation in the game design should be evaluated during game development.

There is also anecdotal evidence that re-phrasing some heuristics might be beneficial from the novice inspectors’ point of view. This direction should not be taken carelessly, however. Heuristic evaluation is an expert review method and novice inspectors were used in the studies because they were readily available and their sheer volume overcomes their possible incompetence of finding as many problems as a smaller group of experts. Their challenge in assigning certain problems to heuristics is interesting, but not the primary focus of this article. Regarding heuristics, a good heuristic is easy to comprehend and covers a wide array of similar problems with meaningful resolution. Each heuristic should provide an individual and separate lens for the evaluation and each playability problem should be able to be traced to a single heuristic. Achieving such clarity requires

careful design and, in this case, more data. In the future, we will conduct more experiments with additional inspectors and social games.

10 Conclusions

This article presented two studies on exploring the playability of social network games. The goal of Study I was to find out possible domain-specific problems and to test the applicability of using established heuristics when evaluating social games. In Study I, 18 novice inspectors conducted a heuristic evaluation on the playability of the social game *Island God*. The inspectors found 50 unique problems and the seven most common problems were presented and discussed in detail. Three domain-specific playability problems were identified: “Boring Gameplay”, “Interrupting Pop-Ups” and “Friend Requirements”. The results also indicate that the established playability heuristic set was capable of describing these domain-specific problems.

The goal of Study II was to confirm the domain-specific problems found in Study I. 12 social games were evaluated with playability heuristics by 58 novice inspectors. The study confirmed the existence of the domain-specific problems identified in Study I and several games had these problems. In addition, three new domain-specific problems were introduced: “Click Fatigue”, “Spammy Messages” and “Aggressive Monetization”.

All of the domain-specific problems found are derived from the design characteristics of social games. This article discussed the design characteristics that cause these playability problems and suggested possible solutions on how to overcome these problems in design. Solving the domain specific problems is important for the industry because otherwise they will impair the game experience and make games less approachable, which in turn results in less profitable business in a long run.

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ARTICLE

III

Critical acclaim and commercial success in mobile free-to-play games

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Critical Acclaim and Commercial Success in Mobile Free-to-Play Games

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ABSTRACT

Critical acclaim is considered to be one of the main predictors of profitability of game products. Major game publishers face tremendous hurdles in order to fare well in different forums that review and rate their products. However, little evidence exists on the relationship between ratings and profitability beyond anecdotal assumptions. In this study we investigate the relationship between critical acclaim and commercial success in mobile free-to-play games via a mixed-method study. First we look at the correlation of reviews and profitability, and then present an exploratory qualitative inquiry, analyzing games with high Metascores and games with high grossing. The results reveal that the relationship between review ratings and profitability is even more problematic in mobile free-to-play games than in many other game categories. Games with high Metascores differ substantially from the top-grossing games, being closer to traditional single-player games than typical free-to-play games, with little emphasis on monetization mechanics.

Keywords

Free-to-play, mobile games, Metascore, reviews, grossing, sales

INTRODUCTION

The game industry has grown significantly during the last years and continued to spread to various new platforms (Siwek 2014). To better inform the gaming audience in choosing games from an increasingly large selection, a large variety of different media outlets provide game reviews and ratings. Most of the online marketplaces, such as Steam, Amazon, and App Store have their own consumer rating systems, and services like Metacritic and GameRankings aggregate the increasing number of critic reviews into simple numbers.

Free-to-play (F2P) games, too, have been affected by the increased role of ratings. F2P games have gained unforeseen popularity and commercial success, and this has led to a “gold rush” towards converting traditional game business models into the F2P model (Alha et al. 2014; Brockmann et al. 2015; Hamari 2015). This inevitably means there are abundance of games of varying quality, and to help to find the best of the whole, reviews can help.

However, equating critical acclaim with the overall quality of a product and its commercial success is problematic. As witnessed in areas of other media content, even

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though review scores can in some cases influence or be used to predict the sales, the relations are not always straightforward (Dellarocas et al. 2007; Chen & Xie 2005; Bailey 2005). Despite this, reviews have gained an increasing position of power in game publishing (Nieborg & Sihvonen 2009; Totilo 2008; Rose 2012).

In this paper we investigate the relation between critical acclaim and commercial success in mobile F2P games. First we look into the correlation of critic reviews and grossing rank in iOS games in general and in F2P iOS games specifically. We continue with an exploratory qualitative inquiry into F2P iOS games by analyzing two groups of games: one with high Metascores and one with top-grossing ranks.

BACKGROUND

Ratings and Game Profitability

Although there is a dearth of academic research on the connection of review scores to consumer behavior in the area of games, the connection has been studied with other media content, especially in film studies. According to research, reviews do correlate with box office income in movies, although it is not clear whether they influence the sales or merely predict them (Eliashberg & Shugan 1997; Basuroy et al. 2003). These relations are not always straightforward and their appropriate use is challenging (Dellacorras et al. 2007; Chen & Xie 2005; Bailey 2005). In game products the correlation of Metascore and sales has been studied with Xbox 360 and PS3 games (Greenwood-Ericksen et al. 2013) and Steam games (Orland 2014), both studies finding a strong positive connection between Metascores and sales. According to a study by the video game research company EEDAR (2010), the reviews players read before playing strongly influence the way they themselves rate and value games, suggesting that the reviews would not only predict sales, but could also influence them.

At least when it comes to mobile games, however, critic reviews are not usually the first choice of information for the player when deciding which mobile game to play. According to EEDAR (2014), at least friend recommendations, consumer reviews, and top charts are more influential when choosing to download a mobile game. Game criticism is changing as the power from the press is spreading to consumer reviews and new forms of consumer criticism, which have partly replaced the role of critic reviews. Especially Let's Play videos have gained popularity, with most popular and influential streamers gaining billions of views (Martin 2015; Time 2015).

Despite the change, critic review scores remain in a critical role and are still used as the measure of critical acclaim. Especially Metacritic, one of the biggest game review aggregator sites, has gained increasing popularity and importance. Platforms like Steam and Amazon have included Metascores on their stores and Metacritic has gained power as a tool for measuring games. It has even been criticized for damaging the game industry, as publishers have been reported of giving out bonuses dependent on the Metascore instead of offering sales-based royalties (Totilo 2008; Rose 2012). Reaching a high Metascore has even been used as a job requirement in the industry (Matulef 2012).

Metacritic aggregates critic reviews of games and other entertainment products, and the aggregated reviews are combined into a numerical form called a Metascore. Having a Metascore requires a game to have a minimum of four critic reviews among all of the over 100 review publications Metacritic has selected as their review providers. Instead of simply extracting the means, Metacritic puts more weight on “some critics and

publications than others based on their quality and overall stature” but have not released the details of the procedure¹. Metacritic excludes consumer reviews from Metascore and instead has a separate User Score, which is collected from Metacritic’s users.

Free-to-Play

Regardless of the success of the F2P industry, only few games end up making it to the top while a vast amount of games receives only little or no revenue (Pinchefskey 2013). As F2P games have no entry cost and the revenue is mainly generated through selling in-game content and virtual goods, commercial success cannot be measured by sales or downloads of the game (Hamari 2015; Hamari & Keronen 2016; Lehdonvirta 2009). The profitability is measured by grossing, the total income of the game. F2P games dominate the top-grossing lists compared to premium games; at the time of writing, the top ten list of top-grossing iOS games comprised solely of F2P games. In addition, the top of this list is relatively stationary, as the same games tend to stay in the peak positions for years, while new additions rarely make it to the top or stay there. For instance, *Clash of Clans* (Supercell 2012) has placed in the top ten since shortly after its publication in 2012.

As the F2P model changes the way games are designed and played, it inevitably affects the game experience (Alha et al. 2014; Hamari 2015; Lin & Sun 2011; Paavilainen et al. 2013). The developers have to take the revenue model into account while designing the game as the purchases are designed as a part of the gameplay (Hamari & Lehdonvirta 2010; Hamari & Järvinen 2011). These real-money transactions are known as in-app purchases and can range from less than a dollar to hundreds of dollars. Bringing spending inside the game creates new challenges and new types of game experiences. The design of these games is usually strongly based on metrics, deducing from statistics which gameplay features or items are the most popular (Hamari & Järvinen 2011; Paavilainen et al. 2013). This way, however, some developers may go for faster revenue instead of trying to create better experiences and lasting interest.

F2P model has raised ethical issues, especially in cases where the spenders are underage or the game is producing its main income through “whales”, players who spend substantial amounts of money on the game (Alha et al. 2014). F2P games have received a high amount of critique for weakening the game experience and even taking advantage of players. However, not all F2P games have a negative reputation. For instance, *League of Legends* (Riot Games 2009), *World of Tanks* (Wargaming 2010), and *Hearthstone* (Blizzard Entertainment 2014) have been positively received by critics. These are also games that are commercial successes. Surprisingly, this is not a common combination. For instance, the current leader of the top-grossing list of iOS, *Game of War - Fire Age* (Machine Zone 2013), has a Metascore of 67, having mixed or average reviews by Metacritic’s standards. At the time of the writing, it had been reviewed only by four critics on Metacritic, which is quite a low number for a game that has enjoyed immense commercial success.

METHODS AND DATA: QUANTITATIVE PHASE

To examine the relation between critical and commercial success, we used both quantitative and qualitative methods to gather and analyze data. For the quantitative analysis, two datasets were collected and combined in August 2014. The first data was retrieved from Metacritic by including all iOS games with a Metascore. The list included 2596 games. The second dataset was collected from Sensor Tower, a service providing data about mobile games. We retrieved the top 1000 iPad games from the US top-grossing list.

These two datasets were then merged into one list to allow comparison between the two, resulting in a list with 3360 games. The list included games with different monetization models, which were sorted into four categories: F2P (free with in-app-purchases (IAP)), free (free, no IAP), paid (purchase cost, no IAP) and paid with IAP (purchase cost and IAP). Unfortunately, we had this information only from the games that were part of the Sensor Tower dataset, as Metacritic does not provide such information. We then used regression and correlation analyses to investigate the relationships between Metascore, grossing rank, and the business model.

RESULTS: QUANTITATIVE PHASE

The first observation when looking at the merged dataset was that only 236 of the games on the 1000 top-grossing games (23.6%) had a Metascore. It can therefore be concluded that from the games that make the most money, only a small portion ends up with reviews to begin with.

One of the explanations for this is derived from the next observations: as many as 736 (73.6%) of the top-grossing games are F2P (see Figure 1). When we look at games that utilize some other monetization model, 41.5% have enough reviews to have a Metascore, while for F2P games the percentage is only 18.2%. It therefore seems that mobile F2P games are relatively rarely reviewed by the press. F2P games also receive lower scores by the reviewers than games with other monetization models. The average Metascore for F2P games on the list was 71.8 ($n = 158$), while for games with other monetization models it was 79.8 ($n = 156$).

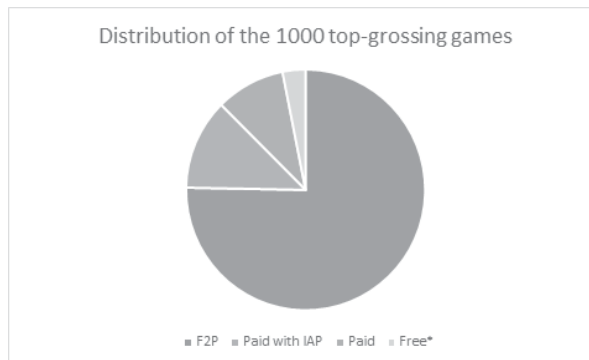


Figure 1: The distribution of the top-grossing games.
*Free games are most likely paid games that have removed their price either temporally or permanently.

The scatter plot (Figure 2) shows the distribution of games along Metascore and grossing rank. While there are no remarkably clear visible patterns, the Pearson bivariate correlation test shows a statistically significantly negative correlation ($r = -0.169^{***}$, $p = 0.009$, $n = 236$), which suggests that those games that are ranked highly in the grossing list receive lower Metascores. These results indicate that games that receive better reviews do not necessarily make more money.

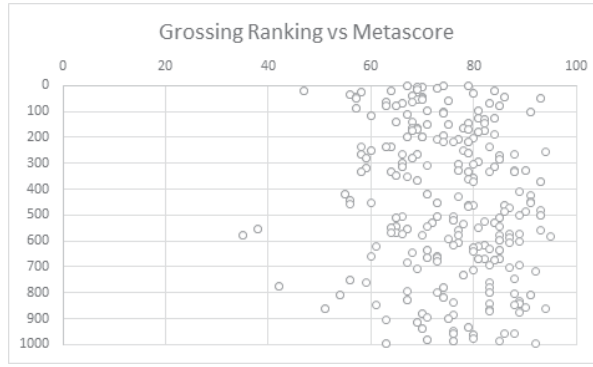


Figure 2: Distribution of games by their grossing rank and Metascore.

We conducted a regression analysis in order to investigate the effects of both Metascore and the business model on grossing rank simultaneously. The results reveal that the selected business model of the game may have more explanatory power on how much the game makes money. In terms of commercial success, it seems to matter more how the business model is integrated into the game rather than the actual quality of the game. A game being F2P predicts grossing rank (Beta = 0.338***, $p = 0.000$) whereas the effect of Metascore is lowered to small insignificant effect (Beta = -0.047, $p = 0.472$). The raw bivariate Pearson correlations between variables can be seen in Table 1.

	Metascore	Grossing rank	Business model
Metascore	1		
Grossing rank	-0.169***	1	
Business model	0.049**	0.203***	1
<ul style="list-style-type: none"> * = $p < 0.1$, ** = $p < 0.05$, *** = $p < 0.01$ Business model: 0 = not F2P, 1 = F2P Rank is reversed: higher rank, higher value 			

Table 1: Correlations.

METHODS AND DATA: QUALITATIVE PHASE

In game studies, playing games has been noted as an important method to understand games (e.g. Aarseth 2003; Mäyrä 2008; Karppi & Sotamaa 2012). Analytical play has been recognized as something different from leisure play as such a utilitarian approach requires the player to take notes and understand the wider context of gaming culture (Mäyrä 2008). Mäyrä (2008) distinguishes two approaches to analytical play: structural and thematic. While structural gameplay analysis focuses on rules, interactions, and games as artifacts with attributes and properties, thematic gameplay analysis highlights the symbols and messages that are experienced by the player as a cultural medium. Aarseth (2003) provides several strata to analytical play: superficial play, light play, partial completion, total completion, repeated play, expert play, and innovative play. For instance, the goal of partial completion is to reach certain goals or sub-goals in the game while total completion includes playing the game through.

Lankoski and Björk (2015) have introduced the formal analysis of gameplay, where game elements and their interactions are examined closely. Compared to the playing research approach, the formal analysis of gameplay can be seen as an isolationist approach

focusing on the game – not so much on the playing context. According to Lankoski and Björk (2015), this approach has been used by Myers (2010) to study the aesthetics of games while Björk and Holopainen (2005) have used it to develop game design patterns. In the formal analysis of gameplay, the game is understood through primitives (components, player actions, and goals) that form the game state. To understand gameplay, the researcher must play the game several times and build understanding by first recognizing the primitives and their relations, then the principles of design, and lastly the role of primitives and principles of design in the game.

Our gameplay analysis is based on approaches suggested by Aarseth (2003), Mäyrä (2008), and Lankoski and Björk (2015). The premise was to gain understanding of the gameplay through playing the games while taking notes, focusing on the formal aspects of gameplay. Partial completion is a sensible approach as the F2P games are usually never-ending and constantly updated.

We chose to examine five games with high Metascores and five top-grossing games more closely by playing them analytically. The lists used in the quantitative analysis were used to find games for both categories by selecting the games among the tops of the lists. We tried to select as representative spectrum of genres as possible. Genre refers here to the genres shown for the games in App Store. After the selection, some games were disqualified from the analysis as a closer examination revealed them not being actual F2P games, for instance in a case where the IAP included only unlocking the full game. New games were selected to replace these games. The final selection with their Metascores and grossing ranks are listed in Table 2.

	Game	Publisher	Published	Genre	Type	Metascore	Grossing
HIGH METASCORE	Hearthstone: Heroes of Warcraft	Blizzard Entertainment	2014	Card, strategy	Collectible Card Game	93	49
	Punch Quest	Rocketcat Games	2012	Action, arcade	Endless Runner	93	>1000
	Galaxy On Fire 2	Fishlabs	2010	Adventure, role-playing	Role-Playing Game	90	>1000
	Elf Defense Eng	Jellyoasis	2012	Board, strategy	Tower Defense	89	>1000
	Angry Birds Rio HD	Rovio Entertainment	2011	Arcade, puzzle	Physics Puzzle	88	332
TOP-GROSSING	Game of War - Fire Age	Machine Zone	2013	Role-playing, strategy	Combat Builder	67	3
	The Simpsons: Tapped Out	Electronic Arts	2012	Adventure, simulation	City Building	69	7
	Clash of Clans	Supercell	2012	Action, strategy	Combat Builder	74	1
	Candy Crush Saga	King	2011	Arcade, puzzle	Match-Three	79	2
	Hay Day	Supercell	2012	Family, simulation	Farm Simulation	TBD	4

Table 2: Analyzed games and their details as they were in August 2014.

As mobile F2P games have a special nature due to their monetization model and platform, no existing game analysis template was used. A specific template was created

by a group of researchers, based on the design literature of games (Fullerton et al. 2004; Schell 2008; Fields & Cotton 2012) and on studies focusing on F2P games (Hamari & Lehdonvirta 2010; Hamari & Järvinen 2011; Paavilainen et al. 2013). The template was tested and modified with two test rounds, both including several mobile F2P games.

The final template had eight categories with specific concentration points: 1) First-time experience, 2) Game mechanics, 3) Audiovisuals, 4) Narrative, 5) Sociability, 6) Monetization, 7) Playability and bugs, and 8) Returning to the game. In addition, a simple gaming log was kept by taking notes while playing.

Two researchers analyzed each of the selected games using the template. The high Metascore games and the top-grossing games were analyzed in turns to minimize the effect of time on the analysis process. Each game was played for a minimum of one hour, but as much time as necessary was used until the researchers were confident they understood how the game works and all the important aspects were covered. This usually varied from a couple of hours to a few weeks. After the analysis round was completed, the data was analyzed by the two researchers, first separately, then together. For each category from the template and for each game analyzed, the findings were discussed and compared to find the relevant issues to be taken under a more detailed inspection.

RESULTS: QUALITATIVE PHASE

First Experience

The first experiences in the high Metascore category varied substantially, most visibly in their tutorials. *Punch Quest* had no tutorial, only having the very simplistic instructions visible each time a new game was started. One could start the game right away and know what to do. *Hearthstone*, then again, had approximately a 30-minute long tutorial, which is by far the longest of all of the games analyzed. However, neither of the researchers found the tutorial tedious or prolonged, as it felt well-paced and well integrated to gameplay, feeling like playing the game properly.

In both examples – as in all cases in the high Metascore category – the beginning of the game and the tutorial or the lack of it felt purposeful and fitted the game. When the mechanics were simple, there was a very short and simple tutorial or no tutorial at all. When there was more complexity in the game, the tutorial was longer and more comprehensive. The player had freedom of choice in some parts of the tutorial and was not forced to follow instructions strictly. Each of these games could be without in-app purchases played as long as the player wanted to.

In the top-grossing category the tutorials were experienced as more limiting, using arrows as indicators where to click and having no control on what to do next. These types of tutorials were not experienced as that useful either, as the player usually clicked the indicated points without thinking what she was doing, and thus did not actually learn how to play the game. In *Game of War - Fire Age* the whole screen was darkened during the tutorial except for the point where you needed to click. This way, the clicking was, in a sense, missing its context. While in *Candy Crush Saga* the tutorial was as limited, it offered the option to skip it (see Figure 3). In some games, like in *The Simpsons: Tapped Out*, the game halted quite soon after the beginning, and the player had to either wait or turn to in-app purchases.

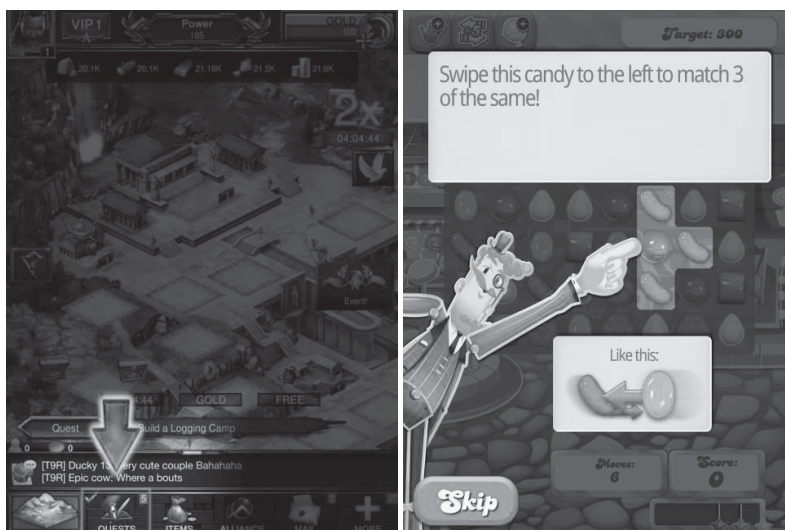


Figure 3: Tutorial phases in *Game of War - Fire Age* and *Candy Crush Saga*.

Game Mechanics

The games in the top-grossing group typically had a lot of simple mechanics, such as constructing buildings, growing crops, or ordering a character to carry out missions. Usually these actions then triggered a waiting time, which in turn resulted in rewards after completion. These types of mechanics were then repeated often, sometimes in cycles, creating the core loops of the games. For instance, in *Hay Day*, one would plant the seeds, wait for crops to grow, harvest the crops, create fodder, feed the animals, harvest the animal products, product foodstuffs, sell those on the market, and improve the farm with these resources so it could produce even more products. The core loops are not usually straightforward and might include several parallel, yet intertwining loops. For instance, in *Hay Day* the growing of crops could be followed by selling the crops, feeding them to animals, creating foodstuffs from them, harvesting them for more seeds, or completing specific missions that required the products. These games created their seeming complexity through a vast number of simple click-based mechanics rather than introducing more interesting mechanics. *The Simpsons: Tapped Out*, however, also kept the number of possible tasks that the player was able to do low, and usually the sessions only included collecting the cumulated resources and setting the characters to do the next tasks. These games lacked in difficulty, and the challenge was more in having the patience to slowly evolve the farm, city, or barracks – or use money to skip the waiting.

The feeling of progression was important in these games, but they executed it at a different pace. Where *The Simpsons: Tapped Out* progressed slowly and kept sessions short unless money was used, *Game of War - Fire Age* included a lot of small things to do, and although the overall progress was not that fast, the feel of progression was strong in every session. For instance, each of the buildings could not only be built, but also upgraded many times. At the same time, this brought more repetitiveness into the game.

These games usually included quests or missions to guide the progress of the player. In some games, these quests had to be done in a certain order to get the rewards, and if for instance the player had already constructed a certain building before the quest became

active, the player had to construct a second building of the same type to get the reward. *Game of War - Fire Age* was an exception, as the quests were more alike an achievement system, and even though the player might not have been aware of all of the quests, the player was rewarded if she, sometimes unintentionally, completed any of them.

Candy Crush Saga, as expected as a puzzle game, differed from these games. As a match-three game, the main mechanics were switching the places of candies to create candy combinations of three or more. As the game advanced, the game introduced additional gameplay elements and varied the game experience this way. *Candy Crush Saga* also offered quite challenging levels. The game started as relatively easy, so the player could play long enough to get hooked before the first difficult level, which tried to monetize the player into buying enhancements to help to pass the challenge.

The high Metascore games varied quite a lot in their game mechanics. *Punch Quest* was the simplest of the games, as jumping, hitting, and blocking were the only mechanics used during the actual gameplay – the character even moved on its own. The players played a similar, procedurally generated level over and over again, but kept evolving the character between the levels, therefore making it more probable to advance further on each round. In addition, the player could influence the progression by selecting the path when the level branched into different directions, giving a greater feeling of control to the game. On the other end of complexity, *Galaxy on Fire 2* included almost full-fledged role-playing game elements with story missions, side missions, talking to non-player characters, character and spaceship development, moving around the galaxy, mining resources, and battling enemies. All of these mechanics still stayed reasonably simple, and while the game had a lot of content for a mobile game, a lot of it remained similar.

Hearthstone, again as an exception, offered the feeling of deepest gameplay experience with rather simple mechanics. As a collectible card game, the game offered a starter set of cards, which the player could then use to play with other players online. More cards could be acquired by playing or buying with in-game currency or money, and building an optimal deck or decks became a part of the game. The existence of other players created more depth than AI-based opponents could have, and as the players were matched based on their performance in previous games, the opponents were usually well within the same skill level. *Hearthstone* has also included single-player campaigns in the game, which can be unlocked with in-game currency or money. They include challenges against different AI decks, and as a reward the player gains exclusive cards.

Audiovisuals

Both the high Metascore and top-grossing games had typically high-quality graphics and audio, although in some cases the audio loops were rather short. Many of the high Metascore games used simple graphics, such as *Punch Quest*'s pixel graphics or *Elf Defense*'s and *Angry Birds Rio*'s cartoonish graphics. *Hearthstone*'s cartoonish graphics were more detailed and had high production values. Attention had been paid to details for instance in the opening animation of a new card pack. When the player had no possible moves left, the game played a "Job's done!" audio clip imported from the *Warcraft III: Reign of Chaos* game (Blizzard Entertainment 2002). The graphics of *Galaxy on Fire 2* were more realistic, and although a bit outdated, it should be mentioned that the game has an HD version with updated graphics.

The Simpsons: Tapped Out stood out among the games as its graphics and animations and voice acting resembled the animation series. However, some portions of gameplay had no

music at all, and not all dialog was voice acted. As an exception, *Game of War - Fire Age* featured more medium-quality graphics, with some of the visuals pixelated or blurry, and the choice of fonts not feeling finalized. The audio did not stand out either, and the game used one notification sound for various occasions inside the game. The graphics mattered not only in the actual game, but also in the advertisements shown in the game, which influenced the attitudes towards the game. This was especially true when the advertisements were of poor quality or even suspicious. Although not directly connected to visuals, *Game of War - Fire Age* featured grammar errors, further negatively influencing the feel of quality of the game.

Narrative

The high Metascore games varied in their storytelling. *Hearthstone* and *Elf Defense* both had a story setting, which set the basis or motivation for the gameplay. The gameplay itself did not include many story elements. In *Punch Quest*, no reason for the game was explained when the game started. Only if the player stayed for a longer while in the menu, the game showed a short animation explaining the starting point of the game. As an exception in this group, *Galaxy of Fire 2* had both a setting and a story, which unraveled through playing and had an ending.

All the top-grossing games featured a background story with small story elements in the missions of the game. For instance, in *The Simpsons: Tapped Out*, the player was rebuilding Springfield after Homer had accidentally blown it up. This was used as the reason why player had to clear destroyed blocks and build new buildings and roads. The characters could be set to do missions, which somehow drew their inspiration from the animation series. All the stories in the top-grossing games were never-ending in a sense, as the games keep updating and adding content. In the high Metascore games, *Hearthstone* and *Punch Quest* are never-ending as well, but the story does not progress similarly.

Sociability

The top-grossing games included several social features. The more competitive games, *Clash of Clans* and *Game of War - Fire Age* were the most social, featuring guilds, chats and messaging systems, and making it possible to attack other players and wage war against other guilds. *Game of War - Fire Age* featured a global map, which had a location for each player on that server. Usually the players in a guild moved their locations next to each other, making it easier to both send group attacks and help to defend other guild members. After joining a guild, the members could easily ask help and assist others to construct buildings a bit faster. This feature lowered the threshold to help others, as it did not cost anything, requiring only a simple click. It was possible to donate the less valuable soft currencies to other players and both soft and hard currencies to the guild. *The Simpsons: Tapped Out* and *Hay Day* made it possible to visit other players and see how they were doing. *Candy Crush Saga* was the most single-player experience in the top-grossing group, but it too featured social elements such as rankings of other players and sending and receiving extra lives and moves.

The high Metascore games featured very few social aspects. Even though in *Hearthstone* the matches were played with other players, there was very little communication allowed between the players, as the only possibilities were a few pre-selected expressions. All the other games in the category were solely single-player games, from which only *Punch Quest* featured social media shares and high score lists.

Monetization

F2P games typically use two kinds of currencies, soft and hard. Soft currency can be gained easily through gameplay, while hard currency is more rarely rewarded, if at all. The game then sells the hard currency for real money. It is noteworthy that each of the top-grossing games taught how to use hard currency in their tutorial, while none of the high Metascore category games did this. The offline waiting time grew considerably long relatively early in the top-grossing games. For instance, in *The Simpsons: Tapped Out* the waiting times grew to 24 hours at the longest during the first 1.5 hours of play, and the sessions quickly became extremely short if hard currency was not used.

In all of the analyzed games the player could gain some kind of advantage by paying, including the directly competitive games. However, all the games that had at least one in-game currency also had the possibility to earn that currency by playing, and therefore it was theoretically possible to gain everything in the game without using any real money. In most games, however, gaining everything without paying would have been impossible simply due to the sheer amount of time it would have taken.

The only games that had exclusive purchases with real money were in the high Metascore category. These included new episodes in *Galaxy on Fire 2*, permanently doubling the earning of the in-game currency in *Punch Quest*, and an item in *Angry Birds Rio* that would then allow infinite amounts of uses to skip levels. All of these exclusive purchases were permanent items, and all consumable items could be acquired by playing. *Punch Quest* featured an interesting “donate a buck” feature, where the player could give a bit of money for the developers without gaining any advantage or content for the game.

The categories differed quite clearly in in-game currencies. Most games with high Metascore had only one currency, and this currency could usually be earned in abundance within the game, but could also be bought with real money. *Hearthstone* was an exception, as its single currency resembled hard currency by being slowly earned through gameplay, but more gold could not be bought. However, everything that could be bought with money could be bought with gold, giving gold monetary value. All the top-grossing games used at least two in-game currencies: one hard currency, which was earned only in small amounts by playing, and one or more soft currencies, which could be gathered easily by playing. For instance, *Game of War - Fire Age* had gold as the hard currency and several soft currencies with different values: silver, stone, wood, ore, and food.

Interestingly, none of the games in the high Metascore group had offline progress mechanics, such as waiting times for buildings to finish or energy to gather, while all the games in the top-grossing category used some version of these mechanics. The player had to wait for something put in motion to complete, or as in *Candy Crush Saga*, wait for lost lives to regenerate. In all the games in the top-grossing category, the waiting could be skipped with hard currency or money. Only *Candy Crush Saga* included an option to ask help from friends as an alternative way to skip the waiting.

Some of the top-grossing games felt aggressive in their monetization. In *The Simpsons: Tapped Out* aggressive monetization emerged through limited times for purchasing specific items, and forcing to use the scarce hard currency during the tutorial. In *Game of War - Fire Age* the user interface was crammed with different limited time offers that repeated themselves and other buttons that led to the shop. Sometimes a limited offer ad popped up and filled the whole screen. In addition, naming the hero, the city, or the player herself, choosing a profile picture or changing the hero's avatar were all items that

could be bought and used. This meant that if the player wanted to change any of these after using the item given in the beginning of the game, she had to buy a new one.

However, when the game notified in the beginning that it involved in-app purchases as in *Clash of Clans*, the game already felt a bit fairer. In *Hay Day*, the purchases that cost hard currency needed a double click, preventing the player spending hard currency unintentionally, again making the game feel fairer and more trustworthy.

Playability and Bugs

All the analyzed games had at least some problems with playability, but typically these problems were scarce and minor. The top-grossing and the high Metascore games did not differ substantially as groups, and the differences were more distinct between individual games. *Game of War - Fire Age* had several problems due to a crowded user interface which caused miss-clicking and user interface elements blocking other elements or game view. The game had to be reloaded every time the iPad went into a screensaver mode, and as reloading took relatively long, this hindered the experience.

Galaxy on Fire 2 had more problems as well, mostly caused by the complicated nature of the game, making it hard to find the right menus or know what to do in the game. The icons on the user interface were not self-evident, and the player had to learn where they directed. While most of the games did have some bugs in them, usually connection failures or freezing, there were no apparent differences between the analyzed games.

Returning to the Game

Interestingly, none of the high Metascore games used push notifications. Push notifications are notifications that appear on the screen of the device when the game is not running, and usually let the player know that something has happened or been completed in the game. However, there are other ways to lure the player back. *Hearthstone* included tournaments during which the player had to be active to fare well. *Punch Quest's* Facebook posts might remind a friend of the player to play again. All in all, however, these games were quite passive in persuading the player to return.

On the opposite, all the games in the top-grossing categories had push notifications. Usually the notifications included sounds by default, and especially *The Simpsons: Tapped Out* had quite loud and long notification sounds. The frequency of the notifications varied from one game to another, and was usually highest soon after the game sessions. When the player had not played for a longer while, the notifications stopped or became scarce, notifying mostly of special events happening in the game.

For the researchers, the best way to lure the player back was not the push notifications, but the gameplay: when it was possible to keep the sessions short but still progress in each session, the visits in the game were most frequent. The push notifications worked best when their frequency was not too high, and notified about something essential, while too high frequency led into ignoring most of the notifications. In some games, such as *Game of War - Fire Age*, the strong sociability hooked the player and created commitment.

Summary: Comparison

The high Metascore and top-grossing games differed in most of the analysis categories. Table 3 presents a summary of some of the properties of the games, visualizing the distinct differences between the analyzed groups.

	Hearth-stone	Punch Quest	Galaxy on Fire 2	Elf Defense	Angry Birds Rio	Game of War - Fire Age	The Simpsons : Tapped Out	Clash of Clans	Candy Crush Saga	Hay Day
Teaches to use hard currency	No	No	No	No	No	No	Yes	Yes	N/A	Yes
Currency	Single	Single	Single	Single	No	Several	Double	Several	Single	Double
Everything achievable without money	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Offline progress mechanics	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Push notifications	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Number of social mechanics	Low	Low	None	None	None	High	Low	High	Low	Low
Direct competition	Yes	No	No	No	No	Yes	No	Yes	No	No

Table 3: Comparing game properties.

DISCUSSION

Whereas a strong positive correlation has been found between higher Metascores and better sales with console (Greenwood-Ericksen et al. 2013) and Steam games (Orland 2014), with mobile games the raw correlation between review scores and revenue was found negative, implying that the games higher on the grossing list receive lower Metascores on average. When we controlled the effect of the business model, we found that instead of the review scores the revenue model explains higher or lower revenue, with F2P games bringing more income. Mobile F2P games received lower critic scores on average, but dominated the top ranks of the grossing list.

One reason for this could be the current game press being conservative and not yet accustomed to the new F2P game type. Bringing paying inside the game might feel wrong for the generation that is used to gameplay that concentrates on creating the best possible game experience, free of asking for money (Alha et al. 2014). Mobile F2P games were rarely reviewed to begin with, which can be at least partly explained by how review copies and codes are sent out to game magazines to acquire the game for free for review purposes. As F2P games have no purchase cost, such codes are not needed, and the published F2P games might sometimes left without reviews purely because of this. This is sometimes remedied by sending codes with some virtual currency or other purchasable content for the game for the reviewer to test out.

The game analysis revealed that the high Metascore games were in many ways distinctive from the top-grossing games. Even when considering the fact that the analysis included only ten games, the differences are clear as visualized in Table 3. The top-grossing games were more active in both monetization and retention, both of which are important factors for a F2P game (Luton 2013). The games guided and encouraged to use hard currency and real money and even required it if the player did not want to wait between the game sessions. All of the top-grossing games were active in sending push notifications, trying to keep the player's interest on the game and get her to always return for the next game session. The higher number of social mechanics is also a factor that can strengthen retention, as the social pressure and will to keep playing with friends can be a strong motivation to return in the game. A good group of friends can even make up for the poor game design, stressing the importance of sociability (Paavilainen et al. 2013). Strong

sociability is also a good incentive for acquisition – another important factor for F2P games (Luton 2013) – as when players want to play with their friends for instance in the same clan, they might try to persuade them to start playing to join in.

The high Metascore games seem close to traditional single-player games, which further stresses why the game press might be more favorable to these games. On the other hand, high Metascore games are not aggressive in their monetization, which might explain their low placement in the grossing charts on its part. In a way, the high Metascore games might even be too good to motivate players into spending money. This is supported by earlier findings where enjoyment has decreased purchase intentions (Hamari 2015).

Naturally the division between critically acclaimed and commercially successful games is not exact. For instance, *Hearthstone* builds a bridge between these categories by having both a high Metascore and being relatively high on the grossing list. This is an interesting case, and these types of games could teach us more about the special nature of mobile F2P games and would need further research.

There are limitations to this study, which should be taken into account. First, as the game analysis covered ten cases, it does not allow broad generalizations. Second, game analysis is inevitably a subjective process. This was partly remedied by two researchers analyzing each game. Third, a game's critical acclaim and especially commercial success are not dependent only on the in-game experience, as for instance marketing is a crucial part of the bigger picture. Despite these limitations, the results and their implications are interesting and worthy of further examination.

CONCLUSIONS

In this paper, we examined the relation between critical acclaim and commercial success in mobile F2P games. We used both quantitative and qualitative methods and data, and found clear distinctions between these two ways to measure a game's success. The correlation between mobile game reviews and their position on the top-grossing chart was negative. F2P games were reviewed with lower scores on average than games with other monetization models, but on the other hand, F2P games were significantly more successful commercially. From the analyzed games, the highly reviewed games differed substantially from the top-grossing games by resembling more traditional games than typical F2P games, while the top-grossing games featured more monetization, acquisition, and retention mechanics. The combination of critical acclaim and commercial success is relatively rare in mobile F2P games, and more research should be conducted with the games that reach both of these goals.

ENDNOTES

1 <http://www.metacritic.com/about-metascores>

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ARTICLE IV

Why do players buy in-game content? An empirical study on concrete purchase motivations

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Why do players buy in-game content? An empirical study on concrete purchase motivations



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ABSTRACT

Selling in-game content has become a popular revenue model for game publishers. While prior research has investigated latent motivations as determinants of in-game content purchases, the prior literature has not focused on more concrete reasons to purchase in-game content that stem from how the games are being designed. We form an inventory of reasons (19) to buy in-game content via triangulating from analyses of top-grossing free-to-play games, from a review of existing research, and from industry expert input. These reasons were operationalized into a survey ($N = 519$). Firstly, we explored how these motivations converged into categories. The results indicated that the purchasing reasons converged into six dimensions: 1) *Unobstructed play*, 2) *Social interaction*, 3) *Competition*, 4) *Economical rationale*, 5) *Indulging the children*, and 6) *Unlocking content*. Secondly, we investigated the relationship between these factors and how much players spend money on in-game content. The results revealed that the purchase motivations of unobstructed play, social interaction, and economical rationale were positively associated with how much money players spend on in-game content. The results imply that the way designers implement artificial limitations and obstacles as well as social interaction affects how much players spend money on in-game content.

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1. Introduction

Virtual goods and other forms of in-game content have rapidly become one of the biggest forms of online consumption for gamers and de facto revenue model for game publishers (Alha, Koskinen, Paavilainen, & Hamari, 2016; Hamari, 2015; Lehdonvirta, 2009). Selling virtual goods has especially been an integral part of the free-to-play/freemium business model that has rapidly spread to online services in general but perhaps most prominently to online games. In the free-to-play model the core game is offered for free for the user in order to acquire as many users as possible. The game publisher then attempts to upsell various pieces of in-game content in

order to generate revenue. For instance, an analysis of the top 300 apps in the Apple's App Store reveals that the majority of downloadable apps are games that employ the free-to-play model (Brockmann, Stieglitz, & Cvetkovic, 2015).

One of the main consequences of selling in-game content has been its impact on the design philosophy of games (Hamari & Lehdonvirta, 2010; Hamari, 2011; Lin & Sun, 2011; Nieborg, 2015). Developers are no longer simply trying to create the best possible game they can in the artistic sense, but rather, in order to sell in-game content, the game developers attempt to craft the game in a way that it would entice users to purchase in-game content as frequently as possible. This is commonly done by tweaking the game according to player behavior and introducing new content periodically (Alves & Roque, 2007; Hamari & Järvinen, 2011; Hamari & Lehdonvirta, 2010; Hamari, 2011; Nieborg, 2015; Oh & Ryu, 2007). Therefore, purchase decisions for in-game content are not only affected by people's existing general attitudes, consumption values, and motivations but also by the design decisions and

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the needs built into the game by the developers (Alha, Koskinen, Paavilainen, Hamari, & Kinnunen, 2014; Hamari & Järvinen, 2011; Hamari & Keronen, 2016; Hamari & Lehdonvirta, 2010; Hamari, 2010; Harviainen & Hamari, 2015; Lin & Sun, 2011; Paavilainen, Hamari, Stenros, & Kinnunen, 2013).

While there has been a clear increase in studies investigating purchases of in-game content and virtual goods during the last decade (see e.g. Hamari & Keronen, 2016 for a review), the related quantitative literature has commonly focused on latent psychological constructs rather than being concerned with possible purchase motivations that stem from how the game has been designed. The quantitative vein of literature has been interested in predicting virtual good or in-game content (re-)purchases from perspectives of different affective experiences in the game (Chou & Kimsuwan, 2013; Hamari, 2015; Lee, Lee, & Choi, 2012; Luo, Chen, Ching, & Liu, 2011), customer lifetime value (Hanner & Zarnekow, 2015), content visibility (Jankowski, Bródka, & Hamari, 2016), cultural and demographic aspects (Lee & Wohn, 2012; Wohn, 2014), tele/social presence (Animesh, Pinsonneault, Yang, & Oh, 2011), playfulness (Han & Windsor, 2013), flow/cognitive involvement (Huang, 2012; Liu & Shiu, 2014), transaction cost theory (Guo & Barnes, 2011; 2012), satisfaction (Kim, 2012), perceived value (Chou & Kimsuwan, 2013; Park & Lee, 2011), critical reception (Alha et al., 2016), technology acceptance (Cha, 2011; Domina, Lee, & MacGillivray, 2012; Hamari & Keronen, 2016), theories of planned behavior and reasoned action (Gao, 2014; Kaburuan, Chen, & Jeng, 2009), and expectancy-disconfirmation model (Wang & Chang, 2013; 2014). Qualitative efforts mapping the phenomenon, on the other hand, have been more successful in identifying more specific and concrete purchase motivations that pertain to the nature of the business models and its related effect on game design (Hamari & Järvinen, 2011; Hamari & Lehdonvirta, 2010; Hamari, 2011; Zagal, Björk, & Lewis, 2013), user experiences (Alha et al., 2014; Clegghorn & Griffiths, 2015; Lin & Sun, 2011; Paavilainen et al., 2013), and features of virtual goods (Lehdonvirta, 2009). While the quantitative body of literature has focused on relatively abstract psychological factors, and has therefore been unable to provide knowledge on more specific reasons for purchases that stem from how the game is designed, the contributions of the qualitative studies sphere, on the other hand, have not yet been harnessed in quantitative efforts to systematize the measurement and understanding of purchase motivators for in-game content. Therefore, the efforts on measuring purchase motivations stemming from the design of the game are currently lacking.

To this end, we aim to investigate reasons for purchasing in-game content from a bottom-up perspective that is informed by data and observations rather than from a top-down confirmatory perspective. Firstly, we form a measurement instrument for measuring the different reasons for buying in-game content by triangulating the findings of analyzing top-grossing free-to-play games, existing research on purchase motivations, in-depth discussions with game industry specialists, and literature related to gaming motivations. The resulting inventory of reasons (19) to buy in-game content was operationalized into a survey and was administered to free-to-play game players ($N = 519$) that had purchased in-game content. Next, the factorial properties of the measurement instrument are investigated. Finally, we investigate which purchase motivation factors predict how much players spend real money on in-game content.

2. Questionnaire development

We developed a set of items corresponding to reasons for making purchases in free-to-play games. The aim was to focus on concrete reasons for buying in-game content that players are faced

with in free-to-play games. To comprise a comprehensive list, we analyzed one hundred top-grossing free-to-play games (excluding casino games) according to AppAnnie (a prominent data analysis tool used in mobile markets). From each genre, the typical in-app purchases and in-game spending mechanics were analyzed. We then triangulated the findings based on empirical knowledge on game content business (Paavilainen, Koskinen, Korhonen, & Alha, 2015a, 2015b, 2013; Alha et al., 2014; Evans, 2015; Hamari & Järvinen, 2011; Hamari & Lehdonvirta, 2010; Hamari, 2011; Kallio, Mäyrä, & Kaipainen, 2010; Lehdonvirta, 2009; Lin & Sun, 2011; Nieborg, 2015; Oh & Ryu, 2007; Tyni, Sotamaa, & Toivonen, 2011) and on gaming motivations (Hamari, Keronen, & Alha, 2015; Ryan, Rigby, & Przybylski, 2006; Sherry, Lucas, Greenberg, & Lachlan, 2006; Yee, 2006), supported by a plethora of discussion amidst game developers during the last eight years. The resulting list was further discussed, evaluated and edited in collaboration with an industry specialist who is in charge of monetization strategies in a major free-to-play games company. The final list of 19 motivations was included in a survey (See Table 1).

In the survey, the respondents were instructed to consider all the occasions of using money on in-game content and asked to rate how important the following reasons had been when making in-game purchases on a 7-point Likert scale (1 = Not at all important, 7 = Extremely important).

3. Data

The data was gathered by an online survey through websites and social media pages of three major Finnish games-related magazines. The link to the survey was posted on the websites and in some cases also on the Facebook pages of the magazines. In all cases, the link was accompanied by a short introduction and invitation to participate in the study. The survey was active for 17 days. All the respondents who entered their contact information at the end of the survey were entered in a prize raffle of three video games and eight movie tickets. During the timeframe of the survey, 1159 responses were collected.

From the collected sample of 1159, 70 cases reported not to have played free-to-play games, and were therefore removed. For the remaining responses, analyses were conducted for detecting outliers. For the purposes of this study, only the respondents that had bought in-game content were retained in the final data set as only they were able to respond to the respective questions concerning purchase reasons. This resulted in a sample of 519 respondents.

Table 2 outlines the demographic details of the respondents. The gender distribution of the data is unequal with male respondents representing over 91% of the sample. Regarding age, most respondents, specifically 94.8%, are under 40 years of age. Of the under 40-year-olds, the 20 to 29-year-olds are most heavily represented. The gender and age division most likely reflect the readership of the channels for recruiting the respondents, the Finnish gaming magazines. The respondents reported to be mostly students. The highest completed level of education reveals that most respondents reported to have either a secondary level or a higher education. Moreover, given the high percentage of students in the sample, the heavy representation of respondents reporting their yearly household income to be below 19 999 € is reasonable.

3.1. Descriptive statistics

A descriptive analysis (Table 3) of the purchase motivations reveal that *unlocking content* ($M = 4.963$) was reported as the most important reason on average, followed by *supporting a good game* ($M = 4.765$), *reasonable pricing* ($M = 4.127$), *special offers* ($M = 3.809$), and *investing in a hobby* ($M = 3.441$). These top

Table 1

Reasons to purchase in-game content.

Motivation	Statement	Description	Literature that discusses the phenomenon (in addition to the industry specialist recommendations)
Avoiding spam	I didn't want to bother others by spamming them.	Many free-to-play games have provided the possibility for players to earn in-game currency or goods by sending messages to friends. Spamming friends in this manner, however, is generally frowned upon. Therefore, some players rather pay up than spam their friends.	Alha et al., 2014; Paavilainen, Alha, & Korhonen, 2015b; Paavilainen et al. 2013 (spamming is considered as a major inconvenience in game design); Nieborg, 2015 (paying is an alternative to asking friends to help)
Becoming the best	I wanted to be the best in the game.	Many in-game items boost the performance of players thus giving them an advantage over other players.	Alha et al., 2014 (getting an edge over other players); Lehdonvirta, 2009 (performance & winning); Yee, 2006 (achievement); Ryan et al., 2006 (competence); Tyni et al., 2011 (competition); Nieborg, 2015; Evans, 2015; Park & Lee, 2011 (character competency)
Continuing play	I wanted to continue the game.	Many free-to-play game designs prevent player from continuing the game sessions unless they use real money.	Hamari & Lehdonvirta, 2010 (the need to purchase new items when progressing); Paavilainen et al., 2015a, Paavilainen et al. 2013 (paywalls)
Giving gifts	I wanted to give gifts to others.	Free-to-play games sell gifts that can be given to other players.	Lehdonvirta, 2009; Hamari & Järvinen, 2011; Paavilainen, Alha, & Korhonen, 2016
Investing in a hobby	I wanted to invest in my gaming hobby.	The gaming activity can be considered as a hobby similar to any other free-time activity. Players may be motivated to invest financially to their hobby in addition to investing time.	Alha et al., 2014 (free-to-play games can be compared to other hobbies that cost money)
Indulging the children	I wanted to make my kids happy.	Games are played with young children, or given to older children to be played, both in order to entertain them and to buy free time for the parents. To support those goals, parents may sometimes need to make purchases. The children have their own motivations for gaining the content, but the parents control the money.	Kallio et al., 2010
Personalization	I wanted to personalize my characters, the things I build etc.	One prominent value proposition of a lot of in-game content is that it affords players to differentiate themselves from other players by personalizing their avatar or other belonging in-game.	Lehdonvirta, 2009 (customizability; provenance); Tyni et al., 2011 (customization)
Playing with friends	I wanted to play with my friends.	Some free-to-play games require players to use real money in order to add more friends in-game, or employ highly desired features that must be purchased if one wants to play with their friends.	Hamari & Järvinen, 2011; Yee, 2006 (sociality); Ryan et al., 2006 (relatedness)
Protecting achievements	I wanted to protect stuff I had already earned in the game.	Item/achievement degradation is a prominent game design pattern in free-to-play games where players' earned achievement or items may degrade or be threatened if they are not protected.	Hamari & Lehdonvirta, 2010; Hamari, 2011; Hamari & Järvinen, 2011
Reaching completion	I wanted to complete a level/building etc.	Completing different tasks and levels etc. in a game can be too difficult or time consuming. Therefore, some players might be willing to pay for skipping parts of the game.	Hamari, 2011; Hamari & Järvinen, 2011; Ryan et al., 2006 (competence); Yee, 2006 (achievement); Tyni et al., 2011 (energy refills and task completions)
Reasonable pricing	The free-to-play game was reasonably priced.	Players may be enticed to purchase in-game content if they perceive the deals to be cheap.	Hamari & Järvinen, 2011; Park & Lee, 2011 (monetary value)
Avoiding repetition	I didn't want to spend time repeating same tasks over and over again.	Many games have been criticized for repetitive content. Since designing repetitive content is less costly and requires less innovation it is commonly used. "Grinding" repetitive content can, however, be boring for the players, and therefore, players may be enticed to use real money in order to take a shortcut.	Hamari & Lehdonvirta, 2010 (intentional inconvenient design); Evans, 2015; Paavilainen et al., 2015b
Showing off achievements Showing off to friends	I wanted to show off my achievements in the game. I wanted to show off to my friends.	Players unlock, earn and win many notable signifiers of achievements in games (such as trophies, badges and other virtual goods). However, being able to display all this gaming capital has been also harnessed as a revenue source. Social representativeness and showing off have been observed to be a major reason for in-game content purchases.	Lehdonvirta, 2009 (provenance); Sherry et al., 2006; Tyni et al., 2011; Park & Lee, 2011 (visual authority)

Table 1 (continued)

Motivation	Statement	Description	Literature that discusses the phenomenon (in addition to the industry specialist recommendations)
Participating in a special event	I wanted to participate in special events.	Game companies attempt to come up with novel events and content in the game to keep it fresh. This has also been one way for game companies to introduce new purchasable content. Moreover, special events are often perceived as unique one-off events, which may induce perceived rarity and, therefore, fear of missing out.	Hamari & Lehdonvirta, 2010; Lehdonvirta, 2009; Tyni et al., 2011
Special offer	I wanted to buy special offers that give me more value.	Players may be enticed to purchase in-game content if they perceive the deals to be cheap. This may especially be the case if there are special offers of limited quantity or for limited amount of time.	Hamari & Järvinen, 2011; Tyni et al., 2011; Evans, 2015
Speeding timers	I wanted to speed up timers.	Many games set artificial timers as to how long it takes to, for example, build a building into the player's village. Many players wish to make this process quicker.	Hamari & Lehdonvirta, 2010 (intentional inconvenient design); Lehdonvirta, 2009 (speeding gameplay); Tyni et al., 2011 (energy refills and task completions); Nieborg, 2015; Evans, 2015
Supporting a good game	I wanted to support a free-to-play game that is good.	Players might be enticed to spend money on in-game content to support the company running the game and thus ensuring the game's continuance.	Alha et al., 2014
Unlocking content	I wanted to open new playable content (e.g. levels, characters, cards ...).	One major form of in-game content is simply more content to play such as maps and levels.	Hamari & Lehdonvirta, 2010; Nieborg, 2015; Evans, 2015

motivations seem to correspond mostly to economical extraneous reasons for purchasing in-game content rather than to specific situations in the game, and therefore, possibly these reasons can apply to more players than more specific reasons and thus show higher overall means. Moreover, *unlocking content* does not refer to any type of content and could apply to a variety of in-game content and also therefore exhibit an elevated mean. From the more specific in-game related reasons to purchase we can see higher variability in means that, however, all fall below the mean of the scale (4): *personalization* ($M = 3.672$), *speeding timers* ($M = 3.206$), *continuing play* ($M = 3.019$), *avoiding repetition* ($M = 2.715$), *playing with friends* ($M = 2.671$), *reaching completion* ($M = 2.414$), *giving gifts* ($M = 2.387$), *avoiding spam* ($M = 2.329$), *participating in a special event* ($M = 2.229$), *becoming the best* ($M = 2.208$), *protecting achievements* ($M = 1.861$), *showing off achievements* ($M = 1.855$), *showing off to friends* ($M = 1.584$), and *indulging the children* ($M = 1.297$).

Table 2

Demographic information of respondents, including gender, age, employment, education, and income.

	N	%		N	%
Gender			Education		
Female	41	7.9	No education	6	1.2
Male	475	91.5	Basic education	102	19.7
Other	3	0.6	Secondary level education	274	52.8
			Higher education	137	26.4
Age			Household income €		
–19	120	23.1	–19 999	217	41.8
20–29	244	47.0	20 000–39 999	114	22.0
30–39	128	24.7	40 000–59 999	84	16.2
40–49	27	5.2	60 000–79 999	62	11.9
			80 000–99 999	20	3.9
Employment			100 000–119 999	15	2.9
Full time employment	149	28.7	120 000–139 999	3	0.6
Part time employment	14	2.7	140 000–	4	0.8
Student	232	44.7			
Unemployed	97	18.7			
Retired	4	0.8			
Other	23	4.4			

4. Factor analyses

4.1. Exploratory factor analysis

We conducted an exploratory factor analysis using the PCA extraction method and the Varimax rotation. The factorial structure converged in 11 iterations. The resulting factorial structure explained 57.3% of the variance and all of the factors exceeded Eigenvalue of 1.

The first factor (named *unobstructed play*) includes purchase motivations related to being able to smoothly continue playing without obstructions or distractions: *speeding timers*, *avoiding repetition*, *reaching completion*, *continuing play*, and *protecting achievements*. The second factor (named *social interaction*) includes purchase motivations related to social (self-)presentation and interaction: *playing with friends*, *personalization*, *giving gifts*, *avoiding spam* (refers to the avoidance of having to spam other), and *participating in a special event*. The third factor (named *competition*) includes purchase motivations related to competition, becoming the best player and showing it to others: *becoming the best*, *showing off achievements*, and *showing off to friends*. The fourth factor (named *economical rationale*) includes purchase motivations related to economical rationale for purchases: *reasonable pricing*, *special offers*, *supporting a good game*, and *investing in a hobby* (See Table 4).

As exceptions to factors formed from several items, the *unlocking content* and *indulging the children* motivations do not clearly load onto any of the factors. It is notable that *unlocking content* has much higher mean rating than others (only *supporting a good game* reaching close), suggesting that it is an important motivation in itself – relevant to any people who like the game and want more of it, regardless of why they like it. Perhaps, combined with the fact that the item loaded equally on factors 1 and 2, the fact that the item is more vague on what the unlocked content could be (giving only a couple of examples of content types), therefore not discriminating between possible subcomponents, prevented it from forming a factor of its own. Moreover, *indulging the children* loads onto a factor of its own. This similarly suggests that there are

Table 3

Descriptive statistics.

	Showing off to friends	Showing off achievements	Giving gifts	Personalization	Becoming the best	Playing with friends	Avoiding spam	Unlocking content	Speeding timers	Avoiding repetition
Mean	1.584	1.855	2.387	3.672	2.208	2.671	2.329	4.963	3.206	2.715
Std. dev.	1.205	1.460	1.924	2.282	1.672	2.085	2.026	2.070	2.259	2.087
	Continuing play	Reaching completion	Participating in a special event	Protecting achievements	Reasonable pricing	Special offers	Indulging the children	Supporting a good game	Investing in a hobby	
Mean	3.019	2.414	2.229	1.861	4.127	3.809	1.297	4.763	3.441	
Std. dev.	2.242	2.056	1.835	1.606	2.041	2.285	1.012	2.172	2.133	

Table 4

The purchase motivations EFA (highest loading bolded).

	1 Unobstructed play	2 Social interaction	3 Competition	4 Economical rationale	5 Indulging the children
Speeding timers	0.763	−0.182	0.133	0.141	−0.045
Avoiding repetition	0.716	−0.002	0.202	0.159	−0.045
Reaching completion	0.684	0.136	0.093	−0.058	0.345
Continuing play	0.679	0.265	−0.003	−0.021	0.186
Protecting achievements	0.474	0.347	0.245	−0.009	0.451
Playing with friends	0.181	0.668	0.249	0.108	−0.101
Personalization	−0.129	0.635	0.218	0.235	0.127
Giving gifts	−0.172	0.595	0.194	0.189	0.136
Avoiding spam	0.360	0.567	−0.045	−0.008	−0.009
Participating in a special event	0.184	0.496	0.148	0.186	0.422
Showing off achievements	0.048	0.244	0.818	0.121	0.134
Showing off to friends	0.071	0.202	0.797	0.014	0.117
Becoming the best	0.425	0.002	0.637	0.082	−0.158
Reasonable pricing	0.132	−0.037	−0.018	0.745	−0.157
Supporting a good game	−0.136	0.111	0.065	0.728	0.208
Special offers	0.187	0.295	0.000	0.640	0.063
Investing in a hobby	0.106	0.264	0.216	0.575	0.104
Indulging the children	0.062	−0.022	0.021	0.088	0.796
Unlocking content	0.395	0.368	−0.177	0.177	−0.151
% of variance	15.4%	12.7%	11.0%	10.9%	7.3%
Eigenvalue	4.770	2.172	1.578	1.308	1.056

no clearly identifiable type of in-game content that would be purchased for children, while at the same time purchasing content for children is distinguished as its own identifiable separate motivation. It is, however, connected to *protecting achievements* (0.451) and *special event participation* (0.425) which are almost as highly loaded onto the factor of *indulging the children* as they are on their primary factors.

4.2. Confirmatory factor analysis

Based on the results of the exploratory factor analyses, we conducted confirmatory factor analyses in order to investigate the convergent and discriminant validity of the factors. Moreover, we calculated the means and standard deviations per factor (Table 5). As *indulging the children* and *unlocking content* loaded onto their own factors, they were modelled as a single-item constructs in CFA for comparison purposes.

As per convergent reliability, all composite reliability values exceed the recommended 0.7 (Fornell & Larcker, 1981). As per convergent validity, social (AVE 0.442) and economical (0.492) constructs do not exceed the recommended AVE value of 0.5. When investigating the item loadings closer in the CFA solution, we can notice that in the social construct all loadings fall between 0.666 and 0.732, except for the *avoiding spam* item, which has a loading of only 0.504. Similarly, for the *economic rationale* construct, *reasonable pricing* deviates the most from other items by having a loading of 0.581, whereas other items fall between 0.681 and 0.797. It should be noted that the SEM factor analysis algorithm slightly differs from the one used in SPSS. Therefore, the loadings of different items can differ between the present analysis and the EFA

in Step 2.3. However, for confirmatory analysis, the SEM analysis can be regarded as the more standard approach. By removing these two items from the model, AVEs of both constructs exceed the 0.5 threshold as well as the 0.7 threshold for the square root of the AVE. Otherwise CFA shows similar figures across the board.

As per discriminant validity, no inter-correlation of constructs exceeds the square root of the AVE of either of those compared constructs (bolded figures on the diagonal are larger than any figure in the correlation matrix on the same row or column). Moreover, all items loaded most highly with the construct to which they were assigned. Therefore, we can conclude that discriminant validity is met (see e.g. Fornell & Larcker, 1981).

5. The relationship between reasons to purchase and the amount of money spent on in-game content

While the motivations describe which reasons have been important to respondents when they have purchased in-game content, the means do not inform us about the relationship between the motivations and how much the players are spending money on in-game content. Therefore, we conducted a multiple regression analysis on how the purchase motivation constructs were associated with a latent variable on how much money players use via four items: 1) total money used on free-to-play games, 2) money spent on average per week on free-to-play games, 3) money used on the free-to-play game the respondent has played the most based on their self-reporting, and 4) money spent on average per week on the most played free-to-play. Respondents reported an integer to these questions on the survey. The validity and reliability of this latent variable were acceptable (AVE 0.635, CR 0.874). The

Table 5

Convergent validity and discriminant validity (Square roots of AVEs are reported in bold in the diagonal).

Construct	Mean	SD	AVE	CR	1	2	3	4	5	6
1 Unobstructed play	2.643	1.502	0.521	0.844	0.722					
2 Social interaction	2.658	1.351	0.442	0.796	0.372	0.665				
3 Competition	1.883	1.167	0.655	0.848	0.371	0.441	0.809			
4 Economical reasoning	4.035	1.531	0.492	0.793	0.252	0.480	0.272	0.701		
5 Indulging the children	1.297	1.012	1.000	1.000	0.193	0.152	0.134	0.134	1.000	
6 Unlocking content	4.963	2.07	1.000	1.000	0.229	0.229	0.092	0.223	0.074	1.000

Table 6

The relationship between purchase motivations and the use of money.

IV: In-game purchase activity (R2 = 0.157)	Beta	CI95 low	CI95 high	p
Unobstructed play	0.121**	0.018	0.234	0.029
Social interaction	0.100*	−0.000	0.200	0.053
Competition	0.032	−0.070	0.156	0.580
Economical rationale	0.268***	0.191	0.353	0.000
Indulging the children	−0.047	−0.132	0.043	0.300
Unlocking content	0.014	−0.052	0.075	0.671

* = $p < 0.1$, ** = $p < 0.05$, *** = $p < 0.01$.

two items that were deemed borderline acceptable in the last step (2.5.) were retained in the model. When conducting the following analysis without them, the results did not differ in any remarkable manner, and therefore, to ensure consistency with future studies that may employ this survey instrument, the entire instrument was used here.

The results (Table 6) reveal that purchase motivations of unobstructed play (0.121**), social interaction (0.100*), and economical rationale (0.268***) were positively associated with how much the players spend money in free-to-play games.

6. Discussion

The results of the present study highlight that in games that employ the business model of selling in-game goods, the demand for those goods is, to some extent, dictated by how the game is designed and by the rules that govern how the items function in relation to the game's rules. Therefore, developers can be seen to create value for the in-game products through a careful configuration of the interplay between the game and the products sold therein (e.g. see Alha et al., 2014; Hamari & Lehdonvirta, 2010; Hamari, 2011; Hamari, 2015; Hamari & Järvinen, 2011; Lin & Sun, 2011; Nieborg, 2015; Prax, 2013; Zagal et al., 2013) via various artificial limitations such as the intentional degradation of items, planned obsolescence, or a fear of losing content which has been gathered in the game (Hamari & Lehdonvirta, 2010; Hamari, 2011). Therefore, it may not be surprising that this commodification of games has faced resistance from users and developers alike (Alha et al., 2014; Hamari, 2015; Kimppa, Heimo, & Harviainen, 2016; Lin & Sun, 2011); both artificial obstacles (Hamari & Lehdonvirta, 2010; Hamari, 2011, 2015; Lin & Sun, 2011) and the use of players as a form of commodity (Hamari & Järvinen, 2011; Nieborg, 2015) belong to the repertoire of designs that aims at generating more revenue. These practices have raised interesting questions about the ethics of the game business (Alha et al., 2014; Kimppa et al., 2016; Prax, 2013). Relatedly, past literature has found that the relationship between game enjoyment and willingness to purchase in-game goods is a complex matter (see e.g. Hamari, 2015; Hamari & Keronen, 2016; Park & Lee, 2011), indicating that those players who wish to continue playing the game but find it less enjoyable (possibly because of the aforementioned artificial obstacles) are more willing to purchase in-game items. Therefore, developers are

enticed to strike a balance between having a fun enough game to retain players, but inconvenient enough to entice more in-game purchases. In this manner, obstructing the playing process might hinder the experience for the majority while emphasizing gaining revenue from a small minority of high spenders instead of more equal division, which the developers have themselves called for (Alha et al., 2014). Indeed, a recent monetization report from game industry reveals that 48% of revenue is generated by 0.19% of player population in mobile free-to-play games (Swrve, 2016), highlighting the role of the small paying minority. Findings of the present study corroborate these past observations: people seem to use more money on in-game items in order to *unobstruct play* by, for example, speeding timers or by avoiding the loss of their achievements.

Social motivations have been deemed to be one of the main categories of motivations for purchases of in-game items and other virtual goods in general (Lehdonvirta, 2009). Several studies have investigated the relationship between differing social aspects, such as social value (Shang, Chen, & Huang, 2012), self-presentation (Kim, Chan, & Kankahalli, 2012; Kim, Gupta, & Koh, 2011), social influence (Guo & Barnes, 2011; Hamari, 2015) and social presence (Animesh et al., 2011; Mäntymäki & Riemer, 2014; Shang et al., 2012), status (Guo & Barnes, 2012), and virtual goods purchases. While these studies overall find that many of these latent social motivations have a positive association with purchases of virtual goods, in the present study we examined more concrete forms of social interaction within the game, such as playing with friends, personalizing an avatar, and gift giving and found them to be positively associated with how much players use money on in-game content. Social interaction can be a strong incentive to pay for in-game features, and this can manifest in various ways, for instance, by buying accelerators or boosters to keep up with friends' pace or to help the social group fare better. Helping others by sending gifts is a common game mechanic in social network games and sometimes such games monetize these reciprocal actions by offering in-app purchases of gifts (Lehdonvirta, 2009; Paavilainen et al., 2016; Wohn, 2014), strengthening relationships between players (Paavilainen et al., 2013). As customization factored with other social motivations, the visual alteration can be seen important especially for its social dimension, and is, therefore, more important in games where other players can easily see the customized elements.

The results show that *competition*, on average, was reported to be rather unimportant as purchase motivation for in-game content. Moreover, it was not significantly associated with how much money players spend on in-game content. As far as we know, competition has not been investigated as a determinant of in-game item purchases in prior quantitative studies. However, competition inherently connects to threads of prevailing discussion around the free-to-play business model (see e.g. Hamari & Lehdonvirta, 2010; Lehdonvirta, 2009; Lin & Sun, 2011). Free-to-play games are often called as "pay-to-win", as in many games it is possible to use money to gain competitive advantage. Being able to spend real money in order to gain competitive advantage in a game has understandably

been deemed unfair (See e.g. Alha et al., 2014; Kimppa et al., 2016; Lin & Sun, 2011). While the designs of the games may afford gaining competitive advantage, our results do not support the “pay-to-win” hypothesis in the sense that the pertaining motivations do not seem to increase how much players spend money on in-game items in our data set. Relatedly, game design professionals have indicated that pay-to-win monetization is a sign of a poorly implemented free-to-play game business model (Alha et al., 2014; Lin & Sun, 2011; Paavilainen et al., 2016).

On average, *economical rationale* was rated as the most important reason for in-game purchases overall, and it was most strongly associated with how much players spend on in-game content out of the purchase motivation dimensions established within the present study. Prior literature on virtual good purchases has commonly investigated economic motivations operationalized as monetary value (e.g. Chou & Kimsuwan, 2013; Kim, 2012; Liu & Shiue 2014; Park & Lee, 2011), i.e. the respondent's perception whether the in-game items offer value for money. In the present study, we measured a more diverse set of variables regarding the economic rationale related to purchasing in-game items: price, special offers, and willingness to support the developer of the game. However, factor analyses revealed that these aspects converged onto a single factor – named here *economical rationale* as it consists of more than just the perception of the relationship of value versus cost. It is somewhat surprising that a motivation that is almost altruistic – wanting to support the game developers – is so strongly associated with attempting to capitalize on good deals, which can be considered more of an individualistic, rational reasoning. Another possible interpretation is, however, that reasonable prices may awaken perceptions of good will and reciprocity that also make consumers willing to return this fairness.

In-game purchases have generally faced a large backlash from the player community because of, for example, the above-mentioned “pay-to-win” issue. Therefore, there are many emotion-based attitudinal factors surrounding in-game purchases that may diminish the overall willingness to make them (Hamari, 2015; Lin & Sun, 2011). However, as our results here indicate, players that deem *economical* aspects as important reasons for purchases may approach purchase decisions with a more rational mindset, and therefore, might be less limited by attitudinal or ideological resistance, and further be willing to spend more money. Therefore, while the in-game content is usually in the focus, the price level and timely special offers should not be neglected. As supporting the game or the game company seems to be one of the criteria for spending money, the handling of public relations and customer service becomes meaningful as well. Furthermore, game professionals have also highlighted the importance of taking care of the social communities in free-to-play games (Paavilainen, 2016; Alha et al., 2014).

Purchasing in-game content for children emerged as a pertinent reason to purchase in-game content in our pre-study for the questionnaire development, and therefore, it was added as one of the purchase reasons in the final questionnaire. This item loaded onto its own factor (*Indulging the children*) with no other purchase reasons. Not surprisingly, however, *participating in a special event* and *protecting achievements* were most highly associated motivations with the factor. It could be that a parent is more willing to spend money on her child's game when not doing so might mean missing seasonal content or rare events, or losing something already achieved – which might seem like an important reason for the child because of fear of missing out. While there are indications that parents have motivation to use money on their children's games especially when there is a danger to lose something or skip content, special care has to be taken when implementing purchases in games targeted for children. For instance, attention should be

paid to assuring that children do not accidentally use money without their parents' acknowledgement (Alha et al., 2014). On average, it can be said that within our data set nearly no one of the respondents reported having purchased in-game content for (their) kids nor was this motivation associated with how much money is being spent on in-game content. However, this is hardly surprising given the age distribution in our data set.

While *Unlocking content* on average was reported as the highest occurring motivation for purchases, it was not significantly associated with the volume of money being used. This may indicate that unlocking content is equally important for both small and big spenders. Alternatively, the phrasing of the statement (“I wanted to open new playable content (e.g. levels, characters, cards ...)”) is quite extensive and has likely caught several types of motivations connected to content unlocking, explaining why it did not correlate highly with any other specific dimension. Therefore, unlocking content is slightly related to several more precise purchase motivations. There are some limitations to our research. Even though the motivations were acquired through careful triangulation, it is likely that not all possible purchase motivations are covered here. This also becomes apparent in the low R² in the regression analysis.

Free-to-play business model has spread to various genres and platforms and it is commonly using a plethora of monetization mechanics. Therefore, it is crucial to see that some of the motivations might be important in only certain types of games, while other motivations could be missing from some games altogether. For instance, many of the currently successful free-to-play games have not included the above-mentioned waiting times, allowing the player to play as long as she wishes, and trying to get the revenue through other monetization mechanics. This is especially typical outside the mobile free-to-play games, in games such as Team Fortress 2 and World of Tanks. It is worth mentioning that these games have also reported conversion rates of 20–30 percent from non-paying to paying players. In comparison, mobile free-to-play games have been reported to have a paying player portion of as low as 1.5 percent (Bishop, 2011; Martin, 2012; Swrve, 2014). The higher conversion rate can be seen as an improvement and a favorable direction from the perspective of the developers as well, as the model of small minority of high spenders paying for the most of the income is one of the ethical concerns in free-to-play games (Alha et al., 2014). These games have a strong focus on sociability, and they monetize the games by cosmetic or competitive items. While this has been rarer especially in commercially successful mobile free-to-play games, the game company Blizzard has been able to bring this model to mobile with their cross-platform game, Hearthstone (Alha et al., 2016). Free-to-play game industry is an extensive one, including games for different platforms and in several genres, and offering various types of experiences (Paavilainen et al., 2015a). Therefore, it would be interesting to study how purchase motivations differ in different types of free-to-play games. Moreover, games garner a varying audience, and therefore, it would be interesting to investigate how purchase motivations may differ along different playing orientations (Hamari & Tuunainen, 2014; Yee, 2006) as well as the demographics of players (see e.g. Williams, Yee, & Caplan, 2008).

7. Conclusion

In this paper, we set out to measure more concrete motivations to buy in-game content than majority of related literature so far. Firstly, we composed a measurement instrument for identifying between different motivations and reasons to purchase in-game content by triangulating from top-grossing games, existing research, and from discussions with game industry specialists. These reasons were operationalized into a survey which was

further administered to free-to-play game players (N = 519) that had purchased in-game content. Based on analyses of the gathered data, the purchasing reasons converged into six dimensions: 1) *Unobstructed play*, 2) *Social interaction*, 3) *Competition*, 4) *Economical rationale*, 5) *Indulging children*, and 6) *Unlocking content*. The motivations for purchases can be approached from many directions. While previous research on the purchase motivations in free-to-play games has concentrated more on abstract psychological factors, this study sheds light on the more concrete rationale behind the purchases. The dimensions will provide a useful tool for future research. From the design perspective, the motivation categories established in the present study is a contribution of its own. While the game design literature has discussed different types of in-game content and strategies for implementing them in games (Fields & Cotton, 2012; Luton, 2013), the presented list of purchase motivations provides a more detailed perspective for the developers to approach in-game content design from the user-centered design perspective.

Secondly, this study investigated how these purchase motivations were associated with how much money players use on in-game content. The results revealed that purchase motivations of *unobstructed play*, *social interaction*, and *economical rationale* were positively associated with how much money the players spend on in-game content, whereas *competition*, *indulging the children*, and *unlocking content* were not significantly associated.

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ARTICLE V

Free-to-play games: Paying players' perspectives

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Free-to-Play Games: Paying Players' Perspective

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ABSTRACT

This paper investigates the free-to-play revenue model from the perspective of paying players, focusing on high-spenders. As the free-to-play model has proven successful, game developers have increasingly adopted it as their revenue model. At the same time, worrying concerns over the revenue model have been voiced, calling it exploitative, unethical, or simply claiming it to offer poor gameplay experiences. We investigated these concerns by conducting an interview study with 11 players who have spent money on free-to-play games, on their perceptions about free-to-play games, experiences on playing them and paying in them, and opinions on ethical issues in the games. The results shed light on how players themselves experience these games.

CCS CONCEPTS

• Software and its engineering → Interactive games • Applied computing → Computer games

KEYWORDS

Free-to-play, attitudes, experience, ethics, paying, digital games

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1 Introduction

The free-to-play (F2P) model has become one of the main revenue models in the video game industry. In mobile games, the model has become especially successful as the top-grossing games on both

iOS and Android platforms are almost exclusively based on F2P. Online multiplayer games are increasingly based on the F2P model and even retail games are featuring in-app purchases to gather extra revenue on top of the fixed price [4]. It can be argued that the emergence of F2P model is the biggest revolution in the game industry since the emergence of online play.

Despite the commercial success, F2P has been criticized by developers and gamers alike. This was apparent especially during the peak of Facebook games, when companies used aggressive marketing to push in-app purchases for a quick profit [27]. Later, one criticized feature has been pay-to-win, where paying players get a competitive advantage over non-paying players, causing frustration and feelings of unfairness. Meanwhile, the media has reported stories where children have accidentally spent large sums on in-app purchases [7, 23].

Depending on the game and the platform, as few as approximately 2% of players spend money on a F2P game. From the paying players, majority of the income comes from a small number of high spenders [10, 33]. The whole revenue model has been considered problematic and even unethical due to a small minority of high-spenders being responsible for making F2P games profitable.

Digital gaming, F2P games included, is evolving rapidly and competition between companies is fierce. As the problems of the model have been widely acknowledged, there has been an incentive for the industry to create better F2P games. There are several approaches to achieve this. As F2P games are played in online environments, players can be identified and all their actions in a game monitored, tracked, and recorded [19]. Game companies can use automatically gathered game analytics to further develop their games after the initial launch. Using metrics can be a valuable tool in making quick and comparably small changes in games during their life cycles. They help game companies react to players' behavior, but they do not tell why players act the way they do.

Instead of merely reacting to players' actions based on metrics, a deeper understanding of their behavior and attitudes can be achieved by more player-centric approaches. Qualitative approaches are suitable when we want to hear the players' own voices, interpretations, and experiences of F2P games. This paper presents an interview study with 11 F2P game players, focusing on player opinions and experiences regarding the model, and trying to identify and investigate both the problematic and positive aspects in F2P games. We have focused on paying players, especially high

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spenders, as despite their crucial role in F2P monetization, they have not yet been widely studied.

2 Related Work

In an interview study by Paavilainen et al. [29], F2P games on social networks were not regarded as particularly social. While they provide a wide spectrum of experiences for different needs, they do suffer from their design characteristics. The interviewees had mainly negative attitudes towards in-game purchases, and none wanted to use real money on them. After the study, F2P games have decreased in popularity on social networks and gained popularity especially on mobile devices, while still having links to social media platforms [4]. The variety of F2P games is wider than ever and thus the experiences in different games can be expected to vary even more.

According to previous research on game development professionals' attitudes towards the F2P model [2], developers viewed the model favorably. They felt that public writing about F2P games could be negative or even hostile even though they are extremely popular at the same time. The professionals saw relatively few ethical problems about the model itself, while they admitted it had some typical problematic aspects.

Jordan et al. [16] investigated developer ethics in a F2P game through players' reactions to five changes in the game. These changes caused protesting and demands among players. In some cases, the developer reversed the changes after the uproar. Sometimes the problem was poor communication, sometimes going back on their initial stance, sometimes being perceived as greedy.

Hamari [13] found that enjoyment of the game reduces the willingness to buy in-game items and increases the willingness to

continue playing. Continued use, attitude toward virtual goods, and beliefs about peers' positive attitudes increase the willingness to purchase virtual goods. Hamari et al. [14] found six in-game purchase motivation categories through a survey study: 1) Unobstructed play, 2) Social interaction, 3) Competition, 4) Economical rationale, 5) Indulging the children, and 6) Unlocking content. From these, unobstructed play, social interaction, and economical rationale were positively associated with how much money players spend on in-game content.

3 Methods and Data

To get a wider perspective on player attitudes and opinions concerning F2P games, we conducted 11 in-depth player interviews. Interviewing as a method is an efficient tool to gain rich qualitative data about the target group's experiences and opinions [26]. The interviewees were screened from the respondents of a survey dataset collected earlier for quantitative studies on F2P games. The survey was circulated on Finnish gaming magazines' web pages and on their social media pages and had 1159 respondents. The background information of the interviewees is shown in Table 1. All the interviewees were Finnish.

The interviewees were handpicked, and the study was aimed to be explorative. The survey data was skewed towards male respondents, which influenced the gender distribution of the interviewees as well. High-spenders were emphasized in the selection, and eight of the interviewees had spent at least 500 euros on F2P games. There were no available female high-spenders for the interviews. Three interviewees were categorized as medium-spenders with 50–499 euros spent on F2P games.

Table 1. Background information of the interviewees at the time of the survey.

ID	Gender	Age	Money on F2P games	Tried F2P games	Time/week on F2P games	Favorite F2P game	Attitude towards F2P games
1	M	-24	High	11-15	15-20h	League of Legends	Neutral
2	M	-24	High	>50	5-10h	War Thunder	Positive
3	F	25-34	Medium	31-35	5-10h	Kim Kardashian: Hollywood	Positive
4	M	35-44	Medium	11-15	35-40h	Hearthstone	Negative
5	M	35-44	High	6-10	5-10h	World of Tanks	Neutral
6	M	-24	High	6-10	10-15h	CS:GO	Positive
7	M	-24	High	6-10	1-5h	Runescape	Positive
8	M	35-44	Medium	6-10	0	Mu Online	Neutral
9	M	25-34	High	1-5	1-5h	Word of Tanks	Positive
10	M	25-34	High	11-15	15-20h	Heroes and Generals	Neutral
11	M	35-44	High	1-5	0	Nothing	Negative

We aimed to have variability in the attitudes towards F2P. The attitude towards F2P games was measured with six claims from the survey with a seven point Likert scale (1 = strongly disagree, 7 = strongly agree):

- F2P developers are only interested in making money.
- F2P games try to cheat the player into spending money.
- F2P games are not real games.
- F2P games are ruining the game industry.
- You have to pay to be able to enjoy F2P games.
- I do not like that F2P games are becoming more common.

The averages of the answers of these six claims were calculated, and attitudes of the interviewee candidates were categorized into positive ($p < 3$), neutral ($3 \leq p \leq 5$), or negative ($p > 5$) towards F2P games. Five of the selected interviewees had a positive attitude, four had a neutral attitude, and two had a negative attitude.

The interviewees were asked to fill a pre-study survey to gather information about their recent playing habits and attitudes to save time during the actual interviews. The interviews were semi-structured, thematic interviews and they took from 38 to 93 minutes each with an average of 64 minutes. The interviews were conducted during 2015, one in person, and the others as phone interviews. The main themes in the interviews were game experiences, use of money, attitudes and ethics, and the future of F2P games. Four researchers conducted the interviews.

The interviews were audio-recorded, transcribed, and analyzed by employing a deductive thematic analysis [21] by one researcher. We set to analyze the interviews from four main themes:

- Perceptions of F2P games
- Experiencing F2P games
- Using real money in F2P games
- Ethical issues in the F2P model

4 Results

4.1 Perceptions of F2P Games

4.1.1 Good F2P Games Improve Attitudes. While we purposefully tried to select interviewees with both negative and positive attitudes, during the interviews the participants expressed positive attitudes towards F2P games. Those who were selected based on their negative attitudes stated that their attitudes towards the model had changed in a more positive direction. The biggest explanation offered for this change was positive experiences with F2P games during the time period between the survey and the interview. However, previous bad experiences might have had long-lasting effects on attitudes.

Yeah, now because of this Neverwinter the attitude is positive, because I feel that the free-to-play side is done right in that -- It might have been even almost a year ago when I stopped playing that Mafia Wars. But it left bad feelings for a longer while, as [the ripping off] started to be so transparent. (ID 11, high, negative)

As many as nine of the interviewees estimated that general attitudes towards the F2P model are more negative than their own. According to the respondents, general opinions towards F2P games

are not always based on facts, and some may for instance have the misconception that all F2P games are pay-to-win. On the other hand, some interviewees had noticed a change in the public's attitudes towards the model, due to newer, better F2P games, which have removed the stigma.

In the beginning it was really negative and everyone was like hell no, now this game is ruined too and blah blah blah. But like I said, there are eight bad ones and two good ones. And when the two good ones appear, they will turn the crowd's feelings. (ID 10, high, neutral)

4.1.2 Free Games can be Expensive. When describing the positive aspects of the F2P model, the absence of a purchase price was seen as the clearest benefit of the model. It allowed them to try games before committing and paying for them, and even then, the payment was described as voluntary and the amount of money spent on the game could be chosen by the player freely.

Compared to the retail model, where the player had to pay a large sum beforehand and had no guarantees about the quality of the game, the F2P model seemed more consumer-friendly. This was even more emphasized when compared to early-access games, where the consumer pays for the game when it is not ready and has no guarantees whether the game will even finish.

Not all F2P games were seen as equal. The majority of the descriptions of both negative and positive F2P games had to do with money. Some of the games described as bad included paywalls (meaning the game prevents or considerably hinders the player's advancement in the game without spending money) or aggressive marketing of in-app purchases. According to the interviewees, non-paying players should have a fair chance against paying players, and pay-to-win games were considered as the worst kind of F2P games.

However, the line where a game became pay-to-win was not always clear. Some games could not be won with money, but they did offer some benefits for paying players. Whether this was bad or not was not self-evident for the interviewees.

Okay, in principle World of Tanks could be blamed of being pay-to-win. The premium tanks in it are... Well, I don't think they are good enough that they could be said to be pay-to-win. Plus, in that game, it's ultimately the player's skill that matters. (ID 5, high, neutral)

There was a consensus that F2P games should not only be able to be played without using money, but they should be enjoyable experiences for non-paying players. Interviewees felt strongly that everything that is sold should be possible to gain through playing as well. Requiring grinding was seen as reasonable, but one interviewee concretized that if it was only theoretically possible to reach everything by playing and not in practice, it felt like a fraud.

Then at some point you started to notice that it wasn't possible to reach the reward by normal playing, but to get there you should have used a little money and buy the items to reach the reward. It started to feel like a hidden hoax. (ID 11, high, negative)

That being said, the players did want the games to sell in-game items. A good game was described as one that would make the

player willingly spend some money on it. A nice selection of items to sell and a well-organized store increased this desire.

One interviewee explained how a well-implemented trading system between players was an important but still under-utilized feature. Steam's marketplace, which has the real feel of a stock exchange and is easy to use, was in this respect spoken highly of, and recommended as the model to copy elsewhere.

That kind of trading system [as in Counter Strike] in other games too, it definitely works. I wonder why it hasn't been researched anywhere else yet. There are unspeakable amounts of money in Steam. Just copy the marketplace system from Steam and attach it to their own game's items. It would be an unbelievable money hole. (ID 10, high, neutral)

The nature of F2P games as services rather than one-time releases shows in the interviews. Regular updates and new content were required as well as meaningful daily quests. These quests seem to be of extreme importance, and they are the reason to visit the game daily. These limited missions give better rewards such as more experience or in-game currency than the rest of that day's activity, and thus attract players to visit the game frequently.

4.1.3 F2P Games Influence the Whole Industry. The division between F2P games and other digital games was usually clear, and they were not treated the same way. It was noted that you could not expect that much from a free game, and non-F2P games were sometimes referred to as "proper games". The division of games continued within the model, and especially mobile F2P games and computer F2P games were seen as separate worlds. Typically, mobile games were seen as less worthy, and more prone to including the negative sides of F2P.

Some of the attitudes towards the model were based on the players of those games. As free games, they attract a different kind of an audience than games that have a purchase price or a monthly fee, and one interviewee mentioned that F2P games attract a crowd that he would rather not interact with.

The presumed negative consequences of F2P games were seen as something that could reach further than just F2P games themselves. It was noted that many developers turn to the model when they notice that F2P games get majority of the revenue, and the success of the model has encouraged some retail games to include in-app purchases that would bring additional costs on top of the single purchase, which was seen as a negative trend.

For some time, it has been common that games with a purchase price or monthly fees have been converted into F2P games. This transition might change the game, and sometimes this change has been for the worse. One interviewee described how after such a change, the game had remained enjoyable for him, as he continued to pay the monthly fees, while was almost unplayable for his friend, who played without paying.

4.2 Experiencing F2P games

4.2.1 F2P Games do not End, they Fade. Players used similar ways to choose F2P games as other games: visibility in the media, hype or popularity, reviews or charts, friend recommendations, or

seeing screen captures or video of the game were all mentioned as reasons to try out a F2P game. In addition, social reasons play a part, for instance choosing a game that can be played with or is already played by friends. The game company or the game's visibility in the eSports scene can influence the selection as well.

I'm a really big eSports fan, and in fact, I have always changed the game a bit according to what is hottest in eSports. (ID 6, high, positive)

The threshold to try out a new F2P game was lower than in other games, as there is no entrance fee. This was also a drawback, as it is also easy to leave the game and transfer to the next one if it does not grasp the player's attention right away. The interviewees quickly saw whether the game was worth continuing, and if the first impression was negative, the game was not returned to.

So if the first bite is a shitty experience, it is very unlikely that I'll ever try the game again. (ID 4, medium, negative)

A game can manage to keep the player's initial interest by offering enough content, a good sense of progression and exploration. This beginning phase was described as exciting. Typically after the game was familiar enough, either it started to find its place in the player's daily routines, or the player started to lose their interest. Sometimes there was a specific point when the player had noticed that the excitement started to fade. This could be for instance due to achieving a long-pursued goal.

Probably at the point when I got the first tier 10 tank [in World of Tanks], I felt a bit like, well, now I have it in my garage. After that, it started to fade a bit, the excitement from the game. (ID 5, high, neutral)

While it was easy to switch games soon after beginning to play, moving from one game to another after playing it for a longer while was not as simple. Sometimes the interviewees had continued playing a F2P game long after the game itself had become boring or unrewarding.

When rationalizing for continuing to play for so long, two main reasons arose: either the player had invested so much in the game that it was hard to give it up or the social reasons kept them coming back. Investments meant time or money put in the game, which was felt to go to waste if the game was quit, or skills gained, which would not transfer to a new game. Social reasons included the game still being popular enough, the social ties made in the community that would be left behind, or the player's friends who still played the game and with whom the interviewee wanted to spend time.

Daily quests were important in keeping the player in the game longer, as this was the content that players might continue completing. Similarly, new content increased the will to continue or even return to the game. However, too many special events and the feeling that the player should spend too much time or money to keep up with the content can also drive the player away.

A break in the playing career has effects on playing. Sometimes it made the player see that they do not need the game anymore, while for others it could spark a new interest. Returning after a break might mean that the player has fallen behind and might feel

like money is required to catch up. In some games taking a break and coming back was easier than in others.

In Hearthstone, it's easy. You can go without playing it for two months, after which you can play it for a week five hours every night. Doesn't matter what the situation is. I don't think I will ever actually be totally fed up with Hearthstone. (ID 6, high, positive)

While players might prolong playing for a long period, at some point they usually finally quit the game. The reasons for quitting were realizing that the game has already shown everything it had to offer or that it required too much from the player to keep continuing.

At some point you get this feeling of boredom, that I kinda have seen everything, there's nothing why I would want to stay here anymore. (ID 3, medium, positive)

After the player had finally quit a F2P game they had been playing for a long time, in some cases they might not understand what they saw in the game or why they had played it so much.

4.2.2 Best and Worst Experiences are about Social Situations. Progression and story wise, F2P games evoked less or milder feelings than other games. While feelings of achievements were present when advancing in the game, these were not usually memorable. The games never actually ended and did not offer the ultimate feeling of accomplishment.

Even though [Star Trek Online] is supposed to be a role-playing game, the role-playing aspects are quite small. That Witcher 3 [a non-F2P game] is kind of a completely story-driven single-player experience in which at least I get immersed completely. (ID 5, high, neutral)

The strongest feelings were connected to playing with other people, and described as alternating feelings of frustration and achievement. Especially the best game experiences frequently included a social aspect, whether it was having fun with friends, having a well-functional co-operation with the team, or beating the opponent in a tight situation.

Similarly, many of the bad experiences were attached to other people. There seems to be toxic behavior on the communication channels connected to F2P games. Some interviewees speculated that some players take these games too seriously and then get mad if they lose or something goes wrong. Hacking and the use of bots can ruin the experience for others, but plainly different skill levels among the players can lead to dissatisfying experience. In some cases, the community had become so toxic that the player wanted out. Some games tried to avoid this by restricting the ways players could communicate to each other.

But I think some people react to it unreasonably. Their fits and tantrums and so on that happen on the forums afterwards, they are something that pushes away from playing or from the game in general. (ID 4, medium, negative)

Social features were seen as an important part of F2P games. While some played alone, most played with friends, within a certain

community or clan, or with strangers, although playing with someone they knew was preferred. Playing with strangers was less organized, and could include players with lower skill levels and unpleasant communication. With friends, it was easier to coordinate actions and play as a group as well as help and guide the players that were not doing as well as others.

Typically, the player was alone in the physical space and the possible communication happened either inside the game or through other communication channels such as Skype or TeamSpeak. While sometimes these game sessions were planned beforehand, more often they were described as first checking if someone happened to be online and then asking if they would like to play, making game sessions spontaneous.

When possible, being in the same physical space with others, such as at a LAN party, made the experience even better, but these situations were the exception. As playing together required everyone to have their own device, playing in the same space outside special events was seen as too inconvenient.

4.3 Using real money in F2P games

4.3.1 Faster Advancement is worth the Money. The interviewees saw their use of money generally in a positive light, and one interviewee claimed that if money would make the game experience better in a game you enjoy, there was no reason not to pay.

If you like the game, I don't see it as anything else than a reasonable investment when you use money on it. I think it's stupid not to use money if you like the game. This is a perverse thought to many. (ID 4, medium, negative)

What was sold in a game influenced in interviewees' attitudes towards paying in games. On one hand, purchases that help the player to advance faster were a bit frowned upon, as it was felt that in time they would make the game into pay-to-win. On the other hand, advancing was also the biggest reason to spend money on a F2P game among the interviewees. Especially if the player could skip boring content by paying a sum of money to get what they wanted, the purchase was seen as being worth it. Sometimes the faster advancement was used to skip to the next phase of the game.

I would say that mostly I put money in it a bit before the endgame so that I feel that I've already got a lot done, and now I would like to get [...] all these elements open so I can see what the endgame is. (ID 3, medium, positive)

One way to advance faster was paying a periodical fee. Subscriptions offered several advantages; for instance, in World of Tanks, buying premium time gives more in-game currency and experience from playing matches, making advancing in the game faster and easier.

Spending on exclusively cosmetic items did not cause similar conflicts, as they have no effect on gameplay. Due to this, selling cosmetic items was seen as more acceptable than items that offered an advantage. While some players liked buying these items, they described them in a belittling way as "needless junk". Others felt

rare items with a distinct appearance earned the player recognition in the game, and that cosmetic items had even a deeper function:

In a way I have a feeling that now I own a part of this game. (ID 1, high, neutral)

The interviewees also recognized different functions for the content they paid for. Cosmetic purchases could create positive feelings in some games, while in other games it was more important to advance with money.

In League of Legends and in CS:GO they bring a certain kind of positive atmosphere, and in Hearthstone they are a possibility to advance. (ID 7, high, positive)

Whether the money spent offered a temporary boost or permanent value influenced as well. For instance, the expansions in Hearthstone or premium tanks in World of Tanks were seen as good investments, as they could be enjoyed repeatedly.

The game developer or publisher behind the game was one of the motivations to use money on a game. Be it supporting small or local companies or the company appearing as “one of the good guys”, appearances matter. For instance, if the company seemed shady and the player could not be sure where their money was going, they were more reluctant to spend it. In some occasions, the interviewees noted that if the game was good and fair enough, they wanted to reward the company by spending a little money. Similarly, if the game supported the player’s values, they might want to support those values with money. These might be reasons enough for some even if they did not feel they would get anything else out of the purchase.

If you use 6-16 hours per day on a game, you do want to help the publisher so you can do that in the future, too. (ID 6, high, positive)

The payment processes in F2P games were described as much easier than they had been before, and this was said to be one reason that F2P spending was more impulsive than buying retail games. Sometimes paying was perceived to be even too easy, in some occasions resulting in regrets later.

Some admitted that they were sometimes too tempted to buy in-game items and had to restrict themselves. One interviewee explained how some items in the store might haunt him for days, and the will to get them might grow too hard to resist.

But when a certain thing is desired for a couple of days, you think about it and look at it, the need to get it becomes compelling. It’s a bit hard to restrain it then. I kinda have to get it if that hits. Otherwise, I’d have to take my credit card info away and give the card to the missus and ask not to tell me the number. They become compulsions of sorts. (ID 10, high, neutral)

4.3.2 Spending a lot is not always a Problem. Spending money was often compared to spending money on any other hobby or buying for instance a bag of candy. Sometimes spending money was also seen as an exciting vice.

Usually [I pay money] in the evening when the children are sleeping and the wife is on the laptop or maybe

watching the television. It’s like going for a cigarette as a young kid, that kind of feeling. It has its own charm, I can’t explain it, I’m sort of addicted to it. (ID 10, high, neutral)

On the other hand, interviewees who had used several hundreds of euros on one game did not feel that it was problematic to them. When compared to how much time they had spent with the game, it became relatively cheap.

If you’d think it so that you have played about three thousand matches, and one match takes about, if you round it down [...], it’s maybe 20 minutes. Then you start to think how many hours it is and start to divide that 600 euros. Then you think that, well, 50 cents an hour or 40 cents an hour. It doesn’t feel bad. (ID 1, high, neutral)

Interviewees also explained how they calculated if a purchase was worth the cost. If they could skip a lot of grinding by buying the item they wanted, it was seen as reasonable. Spending on a F2P item could also function as a reward. While sometimes the purchases could be carefully considered, other times they were much more spontaneous.

Depending on the game [I decide whether to buy or not] by counting, very coldly. Counting how much in-game currency is needed for me to get the new add-on free. Or how much time it takes in the game, that in other ways doesn’t take me forward in any way. I think in these cases it’s more sensible to use money to get rid of that time sink (ID 4, medium, negative)

4.3.3 Paying Changes the Game. When advancement could be bought with money, it brought problems inside the game, and divided the players into paying and non-paying players, who were not equal. An interviewee who had used money explained that conquering other players due to him spending money made him feel powerful, but also conflicted.

And then there’s these who actually play free-to-play and don’t agree to pay, then unfortunately it is easy to mess them up. It brings a sense of power, easily increases the use of money. Shouldn’t be pay-to-win but it does become such in the passing of years. (ID 10, high, neutral)

Furthermore, the tension between the two groups of players sometimes erupted in aggression. Paying players could act like they were better players and mocked others when they won, while non-paying players called out the players they thought were using money and treated them with disrespect.

Some powerful items have a distinct appearance, making one of their appeals cosmetic. For instance, an interviewee described a situation where he had gained a powerful and rare knife from a loot box that the game gives to players. These boxes contain items of random value, and they can be opened with keys that cost real money, making them lottery tickets of a sort. After getting the knife, the player used it for a while in the game, gaining a lot of attention and recognition, and then sold the item for a high price. Even though this money cannot be transferred to the player’s bank

account, it can be spent on any Steam games, making it valuable outside the game.

4.4 Ethical issues in the F2P model

4.4.1 F2P Makes Exploitation Easier. The F2P model as a whole was not typically seen as unethical; instead, it was seen that ethicality is up to individual games and developers. As games could be played for free and no one was forced to spend money on them, in some sense the model was seen as even more ethical compared to models where the player had to pay before knowing whether or not they will enjoy the game. Paying inside the games for additional content was usually not seen as something inherently wrong.

I think it's just like the same as if you would go to buy a bag of candy from the store, it's the person's own business. And there's nothing wrong in that. They are products as any other. (ID 1, high, neutral)

However, the F2P model does seem to have some typical problems. As pointed out by one interviewee, the model allows exploitation very easily, making it possible for children or other players who are vulnerable to temptation to spend major amounts of money and negatively influence their quality of life.

But of course weak individuals are taken advantage of by these companies. I think that is what makes it more unethical. (ID 4, medium, negative)

Pay-to-win came up as an issue when speaking about ethical issues as well. This was seen as a problem especially when the game included direct competition between players, but also if the player could just buy everything without playing. Whether this is an ethical problem or mere annoyance divided the respondents.

Aggressive monetization and milking the players for as much money as possible was another problem associated with the model. The game deliberately hindering the experience so that it became tedious to play properly was seen as wrong.

If it's so that the player has to pay to play it properly, and is forced to pay through frustration. Then that is wrong in my opinion. (ID 1, high, neutral)

The game asking a wide range of permissions to allow playing was seen as unethical, especially if the game would then spam on social media and make the player function as an advertisement for the game.

That social spamming in social media, how it takes advantage of the players to spread itself like a virus and advertise itself. I think these aspects in games are ethically very wrong. So to play the game, give us a permission to everything. (ID 4, medium, negative)

One clearly unethical point was false advertising and misleading the player, such as a game being marketed as free and then including paywalls that obstruct playing without money. Transparency and fairness were called for in these cases. Some had come across as pressuring the player and even trying to get the player to pay by accident. Getting a player addicted first and then ask for money to continue was even compared to drug dealing:

If someone gets hooked, it becomes a bit like drug dealing in a way. Somebody is hooked on something and 'well you want more of this, but you won't get any if you don't pay.' At that point I think it becomes very unethical. (ID 1, high, neutral)

4.4.2 Responsibility to Players, Tools for Problem Gamers. As with any activity, there are addicts and other problem users for whom spending too much money or time on F2P games becomes a problem. The question that remains is what to do about these problems.

The interviewed players felt that fully competent adult players are responsible of their own behavior. However, game developers were seen as being responsible for delivering fair and transparent information about the games for players, so players are able to make sensible decisions about their playing and paying. Developers were held responsible for not exploiting vulnerable groups, such as children or problem gamers, with unethical designs.

In order to keep playing and paying inside acceptable boundaries, the interviewees discussed solutions familiar from online gambling. Many online gambling sites and games offer either voluntary or mandatory tools for tracking one's playing behavior and for limiting the amounts of time and money used in the game. Similar limitations and tools to track one's spending were suggested for F2P games as well. These kinds of limitations were seen in a positive light, and they were not believed to hinder the game experience. Some thought that this should be voluntary for the developer, while others speculated that it was doubtful that the game companies would start providing these kinds of tools on their own, as they were not seen to be beneficial to business.

The interviewees did not hold children similarly responsible for their use of money on games as adults, and it was usually seen as the parent's responsibility to keep credit cards behind passwords and follow and monitor their children's playing. Here, too, monitoring tools for parents and age checks were suggested. Some mentioned that games that target children should be regulated more carefully, and children should not be the target of in-app purchase marketing.

Some interviewees were sure that many game companies deliberately designed the game unethically, while one interviewee suspected that in F2P unethical results were more due to clumsy design. More widely known companies with a good reputation were trusted, while less known companies were believed to act unethically or even maliciously. Again, mobile games were seen to include unethical solutions more frequently, and F2P money game companies who developed for instance F2P casino games were seen as more suspicious than other F2P game developers.

5 Discussion

F2P games have evolved during the last few years, and game development professionals have predicted that this will improve the overly negative attitudes towards the model [2]. The results of this study support the assumption. The interviewees that had previously expressed negative attitudes towards F2P games explained having had experiences with better games, which had improved their

attitudes. Interviewees had made similar observations in general attitudes, which were seen as more positive than before.

F2P games were sometimes seen inferior to other games, which is similar to the findings of Paavilainen et al. [29]. Other games were sometimes referred as “proper games” compared to F2P games, and inside the model, mobile F2P games were sometimes seen inferior to other games of the model.

Obviously, there is no objective line between good and bad F2P games. Some seek casual single-player time sinks, while others want meaningful social play. What is a good game for one can be an example of poor implementation for another. However, there are some features associated with bad F2P games, and these negative aspects were similar to those expressed by game professionals in a previous study [2]: games should not have paywalls, aggressive monetization or pay-to-win mechanics, and games should be enjoyable and everything in them achievable without money. It seems that developers are aiming at the same things as what players want. However, actually getting everything for free can be sometimes comparable to winning a jackpot in gambling games [18] and the line when a game becomes pay-to-win is blurry.

All of the interviewees had played F2P games, and many had a lot of experience with these games. Most negative attitudes could be expected from an audience not actively playing the games, and having preconceptions of the model. Media plays a big role in the public image of F2P games. In news articles F2P games have appeared mostly in a negative light: how F2P games might be unfair or even illegal [22, 25], how children are using money without their parents' knowledge [7, 23], how only a small minority of players pay for the majority of the revenue [5, 11], or how the game publishers are trying to get money from heavy-spenders [24].

While F2P game players have a smaller threshold to trying new games, the games also have a higher probability of losing players after the very beginning of the game. However, when the player has played a game for a longer while, it becomes increasingly difficult to stop playing even after the game has become boring.

These findings stress the importance of different phases in the timespan of playing. The first moments, or the onboarding phase, are crucial in a F2P game, and require substantial focus in the design process. This is also supported by previous research [34].

In the endgame phase, the importance of new content and daily quests is high. These were especially important if the player was on the verge of quitting the game. Supporting and maintaining social communities around the game and keeping them as free from toxicity as possible is important in the later phases of gaming. F2P games must also pay special attention to how taking a break from the game influences the game experience, as this is one of the key points between continuing and quitting.

The sociability of F2P games was important to many interviewees, while in previous research F2P game experiences on social networks have been described as “single player games with a social twist” [29]. Especially computer F2P games were often played in communities or with friends, and the social situations were the most emotion-provoking experiences. The social situations were not only positive, as communication was sometimes

unpleasant and included tension between the paying and non-paying players.

Where in previous research spending money on a F2P game has been seen as pointless [29], in this study it was not so. This is naturally due to the selection process, where we emphasized players who had already spent money on the games. There are still players who have strong principles against using money in games acquired for free. The games might be seen as too simple and not worth their money. However, for those who paid, it had become a commonplace activity.

While getting an advantage with money was seen as problematic, skipping boring content and compensating for a lack of time were widely accepted ways to use money among the interviewees. By using money in this way, players are able to enhance the quality of their playing time [18]. Selling cosmetic items is the least conflicting way to spend money on the game, but simultaneously it is harder to motivate players into purchasing them. Usually a social aspect is necessary, so the player can show others their special gear.

Many concerns have focused on heavy-spenders, but none of our interviewees thought they were spending too much money or saw it as a problem. Spending money was compared to spending money on any other hobby, and the interviewees had calculated that the amounts of money were reasonable. While some mentioned sometimes being too spontaneous in their purchases, a more typical situation included first considering whether the target of money was worth the money or not.

The purchasing process has become easier than before, which on its part has had an important impact in in-app purchases becoming more commonplace as well as more spontaneous. Before, one of the obstacles for using money had been distrust and the difficulty of using money [29]. The easiness lowers the threshold for the first purchase, and if the experience is pleasant, it is much more likely that the player will spend again.

In gamer culture, addictiveness is often seen as a positive feature in games [20]. On the other hand, it is also possible to get addicted to games in a way that can cause serious problems in players' life. This kind of addiction to games was seen negatively by the interviewees and game features that feed the problematic behavior of addicted gamers or other vulnerable groups, such as children, were condemned. However, the overall view of the interviewees was that the responsibility of controlling one's own playing lies on individual players, not on game developers. This view is similar to responsible gambling principles where the final choice of whether or not to commence playing remains with the individual. However, in order to make reasonable choices, players must be informed about the details of an activity [6]. In the context of F2P, this means that players must be informed, for example, about the in-app purchases, viral marketing, real costs of any items, and about the possibility to play without paying [30]. If players make decisions based on accurate and sufficient information, the responsibility of controlling gaming is shifted more towards the players themselves.

Children were brought up as one ethical problem point, which has been discussed by game development professionals as well [2].

At least Google and Apple have already settled legal cases and agreed to refund children's accidental purchases [31, 32], while Amazon has been forced to offer refunds in court [17]. Instead of handling accidental purchases afterwards, this and other problem usage could be remedied with the suggested monitoring tools and self-imposed limitations similar to those used in the gambling industry [6]. These kinds of tools are often voluntary and players can themselves decide what their maximum limit for spending would be [12]. Because F2P games rely on heavy spenders as their main income, it might feel counter-intuitive to use tools that might limit this spending. However, these tools protect against spontaneous spending peaks, not against high expenditure per se. It is also good to note that implementing responsible gaming tools can be good PR to a company [9]. The image of a game company is one of the major reasons to spend or not spend money on a game, and good PR could give a game company an edge instead of posing as a risk to lose income.

The ethical side is of utmost importance in order for the F2P model to keep on growing. For instance, the annoyance of social media spam has been noted in previous research [28], but the ethical problem of a game posting on social media without the player's knowledge is even more critical to fix.

If F2P games are considered as something that cause addiction and problematic behavior, they might be the target of enforced policies, if companies themselves are not doing anything to minimize the possible problems. Some regulations have already legislated by for instance the European Commission [8] and some platforms have been forced to remove the "free" markings on F2P games and need to indicate clearly, if a game includes in-app purchases. In Japan, certain monetization mechanics in mobile games have been banned due to government legislation [1], while the loot box monetization mechanic, commonly used in F2P games, has been banned or is under investigation in several European countries [15].

Before, players might have felt as being manipulated into spending with aggressive marketing and games being rigged towards achieving the maximum spending possible. Attitudes towards paying in F2P games have been negative, while in the newer generation of games paying has become more of an everyday thing. Being able to enjoy the game without money is possibly the most important feature for a good F2P game, and as players feel they are getting their money's worth and are not feeling forced to pay, paying becomes more of a positive activity. These games already exist and fare well both critically and commercially [3].

6 Conclusions

In this paper, we have examined players' perceptions and experiences with the F2P model. The selection process of the interviewees deliberately focused on paying players, and from those, on high-spenders. Therefore, the attitudes towards the F2P model may be more positive as these players have invested in the games significantly. The gender distribution is heavily skewed towards male players, which can also influence the results. The qualitative approach aimed into an explorative study, and the results are not to be generalized.

The findings show an important perspective into how F2P players see and experience the games they play and pay for. While the model was seen as positive and ethical, it included characteristic problems: paywalls, pay-to-win mechanics, content gained only through paying, aggressive monetization, and making exploitation easier. Single games had a great impact in the attitudes of the interviewees, be it positive or negative.

The games were typically enjoyed with other players, and social situation offered the strongest feelings and best and worst moments of gameplay. The crucial moments for gaming careers were the first moments, when it was easy to switch from one game to another, and the endgame, when the player was already getting bored with the game.

For the paying players, paying in F2P games has become a normal activity. Even larger sums were seen as reasonable when comparing how much the game offered in return for the money. Paying in F2P games was more spontaneous than buying other games, partly because of the easy purchase processes, but in many occasions, the value of money was still evaluated beforehand. In this light, most high-spenders saw themselves as sensible consumers, while some mentioned even being addicted to purchases, seeing them as an exciting vice.

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ARTICLE VI

Why do people play location-based augmented reality games: A study on Pokémon GO

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Full length article

Why do people play location-based augmented reality games: A study on Pokémon GO

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ABSTRACT

Pokémon GO brought the location-based augmented reality games into the mainstream. To understand why people play these games, we created an online survey ($n = 2612$) with open questions about the reasons to start, continue, and quit playing Pokémon GO, and composed categories of the answers through a thematic analysis. Earlier experiences especially with the same franchise, social influence, and popularity were the most common reasons to adopt the game, while progressing in the game was the most frequently reported reason to continue playing. The player's personal situation outside the game and playability problems were the most significant reasons to quit the game. In addition to shedding more light on the Pokémon GO phenomenon, the findings are useful for both further studying and designing location-based augmented reality game experiences.

1. Introduction

Location-based augmented reality (AR) games are pervasive games that tie into the everyday life of the players and transform their mundane surroundings into a part of the game world (Montola, Stenros, & Waern, 2009). After being published in July 2016, Pokémon GO (PGO) (Niantic, 2016) became the first location-based AR game to garner mainstream popularity and one of the most successful mobile games in general. The game peaked at 28.5 million daily unique players in the United States alone a week after its launch (ComScore, 2017), it had reached over 750 million downloads worldwide within its first year (Minotti, 2017), and had made \$1.8 billion in revenue with in-app purchases in two years (Nelson, 2018). Previously, location-based augmented reality games had mostly been research prototypes or games without significant commercial success (Paavilainen et al., 2017), but after the success of PGO, many location-based AR games are now entering the market. In this article, we will use PGO as a case to study why people play location-based AR games.

In PGO, players act as Pokémon trainers and walk in the real world, using their mobile app to navigate in the game world while trying to find, catch, hatch, train, evolve, and fight Pokémon creatures. The player's location is tracked by GPS, while the game shows an overlay map of the game world, showing the nearby Pokémon and other interest points on it. The player can tap any nearby Pokémon to change into the catch mode, where the player can throw Poké Balls at them. A

successful catch will add the creature into the player's Pokémon collection, Pokédex, and the aim is to collect all the different creatures, which has been one of the main reasons to continue playing the game (Rasche, Schlomann, & Mertens, 2017). PGO is based on the popular and already over two decades old Pokémon franchise, which has been one of the key reasons to play PGO according to previous studies (Rasche et al., 2017; Zsila et al., 2017).

PGO ties into many research interests from the last decade. It is a location-based pervasive game (Montola et al., 2009; Sotamaa, 2002) that utilizes context-information (Paavilainen, Korhonen, Saarenpää, & Holopainen, 2009) and AR (Bichard & Waern, 2008; Lindt, Ohlenburg, Pankoke-Babatz, & Ghellal, 2007). It ties into a transmedia storyworld (Dena, 2009) while including elements from exergames (Southerton, 2014), treasure hunts (Montola et al., 2009), geocaching (O'Hara, 2008), and free-to-play games (Alha, Koskinen, Paavilainen, Hamari, & Kinnunen, 2014; Paavilainen, Hamari, Stenros, & Kinnunen, 2013).

We look at why people play location-based AR games through PGO. With its exceptional success in this area, it is an important artifact to research from the cultural, academic, and game design perspectives. To study why PGO reached such popularity, we investigate 1) why players have started to play PGO, 2) why they continue playing it, and if so, 3) why they have stopped playing it. We employ survey data gathered from PGO players ($N = 2612$) and a mixed-method design containing both qualitative and quantitative analyses. The contributions of this paper are three-fold: 1) we provide new information on this culturally

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important phenomenon, 2) the findings can be used in follow-up quantitative studies by operationalizing our findings into variables, and 3) the findings can be used when designing location-based AR game experiences.

2. Related work

Location-based games resemble other digital games in other ways, except the way they take place in a physical environment rather than only on a device screen (Leorke, 2018). According to Leorke, the discussion around location-based games has focused on two discourses: how they allow players to interact with strangers in ways they normally would not, and how they transform the surroundings into spaces for play.

Previously, individual location-based games and prototypes have been studied from different aspects, but PGO is the first to have attracted wider academic interest. Especially, the game's effects on health and well-being have been studied (Althoff, White, & Horvitz, 2016; Barkley, Lepp, & Glickman, 2017; Koivisto, Malik, Gurkan & Hamari, in print). Studies explaining why people play the game and especially exploratory studies investigating this are still lacking. Qualitative mapping of such an emerging phenomenon is essential for understanding it.

Rasche et al. (2017) studied the reasons to start, continue, and quit playing PGO in an exploratory survey study (N = 199). The self-reported reasons to start were sorted into categories shown in Table 1.

In Zsila et al. (2017), motivations to play PGO were studied by utilizing the Motives for Online Gaming Questionnaire (MOGQ) with three new factors: outdoor activity, nostalgia, and boredom. These new factors were found to be the main play motivations. In addition, recreation from the original MOGQ model was the strongest motive while the lowest scores were observed with skill development and escapism. Other significantly related factors were competition, social, coping, and fantasy. The authors suggest that the three new motivations should be taken into consideration in future studies when studying games similar to PGO.

Similarly, Yang and Liu (2017) studied motivations for playing PGO. The authors used factor analysis to identify seven motives for playing: exercise, fun, escapism, nostalgia, friendship maintenance, relationship initiation, and achievement. Except for exercise and escapism, the other motives had a positive correlation with the overall amount of play.

Hamari, Malik, Koski, and Johri (2018) studied gratifications of playing PGO and how they predict intentions to continue playing and to purchase in-game items. Their results showed that game enjoyment, outdoor activity, ease of use, challenge, and nostalgia were positively associated with intentions to continue playing, whereas outdoor activity, challenge, competition, socializing, nostalgia, and intention to continue playing were associated with in-app purchase intentions.

3. Methods and data

We designed a survey featuring open-ended questions focusing on game experiences in PGO. Rather than utilizing a pre-defined survey instrument, we emphasized the respondents' own narratives and meaning-making by allowing them to answer freely. This is a fruitful approach when studying new and emerging phenomena. The survey featured closed-ended questions to reveal key demographics and playing habits. In this article, we focus on the three open-ended questions regarding starting, continuing, and stopping to play PGO (translated from Finnish):

1. Begin by explaining what made you to start playing Pokémon GO.
2. What makes you to continue playing Pokémon GO?
3. If you have stopped playing Pokémon GO, what made you to quit?

The survey was developed and tested within an iterative process. During the development, 18 test respondents gave feedback on usability, flow, and other issues that might affect the respondent experience. We distributed the final survey in 15 Finnish PGO and other related Facebook groups, and encouraged respondents to further share the survey. Two Finnish gaming news portals advertised the survey. As an exploratory study, the respondent sample was not aimed to be representative of the whole player population.

The survey was launched on September 1, 2016 at 7:00 p.m. and was online until September 7th, 2016 12:00 p.m. with a total of 2612 respondents. Two cases were removed due to false information and two cases due to technical problems in saving the responses. Therefore, the data consisted of 2612 survey responses.

Of the 2612 respondents, 2595 gave at least one reason to start the game and 2049 at least one reason to continue playing it. Of the 119 respondents who had quit the game, 117 reported at least one reason why they had done so.

The responses were typically short, ranging from a single word to a couple of sentences, longer answers being relatively rare. Many of the respondents gave more than one reason for each question.

We used applied thematic analysis (Guest, MacQueen, & Namey, 2012) for the qualitative analysis, where the open-ended answers were coded by three researchers. For the three survey questions about starting, continuing, and quitting PGO a similar approach was conducted. Three researchers started to code the data individually, taking notes of the issues that rose from the answers and marked the codes and their descriptions to a code guide. At the point of saturation the researchers convened to talk, compare the codes, and merge similar codes together. Based on the final codes, the researchers created main categories for these codes. The categories and the codes they include are listed and described in the results chapter.

The three researchers coded a sample of the data (N = 100) separately twice during the process with the help of the formed code guide, first after the first discussion and later at the end of the process. After both rounds, the resulting codes were compared and discussed. In the

Table 1
Reasons to start, continue, and quit playing PGO (Rasche et al., 2017).

Reasons to start	Reasons to continue	Reasons to quit
Curiosity (68%)	Completing the Pokédex (41%)	Boredom (57%)
Being a Pokémon fan (40%)	Fun or curiosity or recreation (15%)	Difficulties in reaching higher levels (29%)
Media reports (28%)	Finding new or rare Pokémon (11%)	Being disappointed (23%)
Reports from friends (27%)	Catching strong Pokémon or being the best (10%)	Technical problems (18%)
Everybody around me plays it (14%)	Joint activities with family and friends (6%)	Too few Pokémon (18%)
Being fascinated by the augmented reality function (6%)	Being active or outside (6%)	Waned interest (11%)
Combining fun and physical activity (4%)	Updates or new generations (5%)	Too few Pokéstops (9%)
Game for traveling (3%)	Higher levels (4%)	No time to play (9%)
Nostalgia (1%)	Incubating eggs (3%)	Lack of co-users (7%)
	Fighting in arenas (3%)	Too few arenas (5%)
	Nostalgia (3%)	

case of disagreement, a consensus was sought and the code guide edited accordingly. After changes to the code guide, previous codes influenced by the change were corrected. This approach was used to make sure that the researchers shared a unified view and could code a majority of the data alone. In addition, using several researchers helped us to pinpoint challenging and problematic points, and solving these made the process more reliable.

To support the process, we used Fleiss' kappa (Fleiss, 1971) to test the inter-rater reliability with both data samples in the starting and continuing categories. On the first round, we reached excellent agreement (at least 0.80) in 7 starting categories and 6 continuing categories and substantial agreement (at least 0.60) in 3 starting and 2 continuing categories. On the second round, we reached excellent agreement in 7 starting and 6 continuing categories and substantial agreement in 3 starting and 4 continuing categories. No kappa value was lower than 0.60. These kappa values were seen as high enough to be confident about continuing coding the data separately, avoiding the high cost and time-consuming process of all researchers coding all of the data. Furthermore, the process helped us see which categories were the most challenging to code reliably, and we could focus on improving them.

Due to the lower number of respondents who had quit the game and given at least one reason why ($N = 117$), the third question allowed for each of the three researchers to code all of the data. However, the three-step process of first creating a codebook and then comparing two samples of data coded individually by the three researchers was implemented similarly as with the other two questions. At each point, the researchers discussed and compared the codes to achieve a consensus. However, the inter-rater reliability test was not used.

All interview quotes in the Results chapter have been translated from Finnish. Survey participants are indicated after the quotes by an ID number, gender, and age.

4. Results

Table 2 lists the background information and the playing habits of the respondents. As the respondents were mostly from PGO groups on Facebook, it can be presumed that our respondents were somewhat more active than all PGO players on average. At the time of the survey the game had been out for two months.

Table 2
Background information and playing habits.

	N	%		N	%
Gender			Playing frequency		
Female	1628	62.3%	Several times a day	1394	53.4%
Male	927	35.5%	Once a day	483	18.5%
Other	57	2.2%	A few times a week	516	19.8%
Age			More rarely	100	3.8%
Under 18	147	5.6%	I don't play anymore	119	4.6%
18–24	721	27.6%	Level		
25–34	1067	40.8%	Under 10	96	3.7%
35–44	489	18.7%	10–14	265	10.1%
45 or more	188	7.2%	15–19	641	24.5%
Walked distance			20–24	1323	50.7%
Under 50 km	464	17.8%	25–29	276	10.6%
50–99 km	671	25.7%	30 or more	11	0.4%
100–199	946	36.2%	Used money		
200–399 km	476	18.2%	Yes	939	35.9%
400 km or more	55	2.1%	No	1673	64.1%
AR mode			How much money (if used)		
On	200	7.7%	Under 10e	225	6.6%
Off	2017	77.2%	10e–19e	226	8.6%
Depending on situation	388	14.9%	20e–49e	307	11.7%
I don't know	7	0.3%	50e–99e	118	4.5%
			100e or more	63	2.4%

4.1. Reasons to start playing Pokémon GO

We divided the reasons for starting to play PGO into 11 different categories (see Table 3). Altogether, these categories included 53 separate codes, each category including 2–11 codes. On average, one player reported starting reasons from 1.6 categories.

The most frequently brought up reason to start playing was **previous experiences**. As many as 43.9% of the respondents reported experience with fandom for similar types of games or hobbies as a reason to pick up the game. Out of these, experience with Pokémon was by far the most frequent reason to start playing, mentioned by 39.6% of the respondents. The idea of the game brought up nostalgic feelings of childhood moments playing Pokémon games and watching the animation series on TV. Some explained having dreamed of being a Pokémon trainer, and the game felt as the closest thing to fulfill that dream. In a smaller margin were previous experiences with geocaching, Ingress (Niantic, 2013) or other location-based games, or playing games in general.

Nostalgia, I have been a Pokémon fan since the beginning. Finally I can get close to the childhood dream of being a real life Pokémon trainer. (ID 2113, male, 22).

Almost a third of the respondents reported more abstract feelings of **interest** as an explanation for acquiring the game. These included curiosity and the game seeming to be generally interesting or fun. The novelty value was brought up, and being different from other games was seen to be beneficial. Seeing funny pictures of the game or the likable visuals increased interest.

At first I was opposed to taking part in a fad, but then I had to note that the game simply sounded so fun that I had to start playing. (ID 159, female, 24).

Social influence was seen as a strong motivation to start playing. Parents mentioned either wanting to be more informed about their children's activities or wanting something common to do together with them. Similarly, a friend's or a partner's recommendations or wanting to spend time with them while playing were reported.

I wanted to have something shared to discuss with my children. (ID 66, female, 46).

The **popularity** of the game played a significant role among the reasons to start playing. The hype around the game and the visibility of the players had a major effect, and some had waited for the game ever since they had heard about it before the launch.

Everybody was talking about it. (ID 588, female, 53).

The **positive** characteristics and potential effects were an important motivation to start playing. Especially getting physical exercise and spending time outdoors while playing were appealing. In addition, the respondents liked the idea of being encouraged to explore their surroundings and new areas. Some mentioned the game was a way to deal with real life's misfortunes or a way to help with depression.

The game can get even the lazy to go outside, that is why I started. (ID 62, female, 20).

I love to roam in nature, so catching Pokémon is a great excuse to go for a walk. (ID 28, female, 22).

The novel **technology**, such as location-based characteristics or AR, was a reason to try the game. Playing the game in a real environment and using AR features were seen as something that would add value to the game experience, and the combination of the Pokémon franchise and technology were seen to be interesting.

I have played Pokémon on Nintendo handhelds, but with the augmented reality the game seemed to rise to new heights. (ID 393, female, 25).

The **situation** the respondent was in had an effect on picking up the game. These can be divided to internal reasons, for instance wanting something to do while doing other activities, and to external reasons, for instance having a conveniently located PokéStop nearby. Some mentioned having a new phone, which made trying the game out convenient. The game being free and good weather were mentioned, as

Table 3

The reasons to start playing Pokémon GO.

Category	N	%	Codes
Previous experiences	1138	43.9%	Pokémon, Ingress, developer, geocaching, anime, gaming, geek culture
Interest	813	31.3%	Curiosity, interesting, fun, funny pictures, visuals, novelty
Social influence	738	28.4%	Partner, children, friends, siblings, parents, relatives, others
Popularity	709	27.3%	Hype, popularity, expectations
Positivity	326	12.6%	Exploration, exercise, outdoors, utility, non-violent, treatment, exploitability, gamification
Technology	131	5.0%	Location-based, AR, pervasive, technology
Situation	118	4.5%	Something to do, opportunity, platform, free, weather, convenience
Keeping up	96	3.7%	Keeping up, profession
Social features	85	3.3%	Sociability, helping, looking for company, competitive
Mechanics	51	2.0%	Searching, collecting
Nature of the game	28	1.1%	Adventurous, challenge, no competition, easy to play

well.

It is a convenient activity for usually boring situations such as commuting, waiting for a friend in the [city] centre and so on. (ID 389, male, 28).

It was easy to start because there were pokestops near my house and also lure on almost every evening. (ID 869, female, 57).

The status of PGO as general knowledge showed with the respondents. They stated they picked up the game because they wanted to **keep up** with the times. As so many were playing and talking about the game, they believed they were left out or might be missing out if they did not try the game themselves. This was especially important if the respondent had a profession where this knowledge would prove useful, for instance working with young people.

I wanted to keep up with the times. So many played the game that it felt like I'll be left out of the inside jokes, both in my social circles as in entertainment. (ID 69, female, 30).

Originally, I got interested because of my occupation. I'm a class teacher and I thought I should know what the PG phenomenon is about. (ID 68, female, 36).

Social features, such as the general sociability of the game, liking to compete or wanting to help others were brought up. Some felt that playing would be a good opportunity to meet new people, even potential partners.

The possibility to get to know new people by chance. (ID 2469, female, 38).

The game **mechanics** were a reason to be drawn into the game: the respondents had in these cases presumed they would like looking for, hunting, and collecting Pokémon. The "treasure hunt" like gameplay was seen as exciting.

Wanting to catch them all, obviously. (ID 145, male, 25).

The idea that you have to search something from the "reality" is interesting. [...] [T]he combination of "treasure hunt" and nostalgia made me to start playing. (ID 1012, female, 30).

The **nature of the game**, for instance it being casual enough and having easy access, was appealing. When the game was easy to install and get into, it helped in the decision-making. A few liked the competitive nature of the game, while some said the opposite and mentioned liking that competing was not necessary to play.

It is easy to get into this game even for the likes of me who play really little otherwise. (ID 1942; male, 30).

4.2. Reasons to continue playing Pokémon GO

We divided the reasons for continuing to play PGO into 12 different categories (see Table 4). These categories included 58 codes, each category including 2–11 codes. On average, a player reported continuing reasons from 1.6 categories.

Progression was the most common reason to keep on playing. The most common individual reason was collecting Pokémon, mentioned by 27.4% of the respondents. Achieving personal goals, the joy of discovery, and the general feel of progression were important, as well.

Gotta catch them all! This is a true ideal game for a collector, and I don't intend to stop until I've got all forms of every Pokémon. (ID 53, female, 32).

I want to find Pikachu and in the distant future get to level 40. In addition, I intend to learn all the Pokémon by heart. (ID 359, female, 23).

The importance of the player's situation grew when reasoning why to stay in the game. Playing the game was reported as "something to do" while, for instance, walking the dog or going to the store. The game had found its place in the everyday life of the players and had become a habit. Some even reported being hooked on the game. The weather or the game being free had influence, as well as the fact that the player had already put so much time or money into the game, which they did not want to go to waste. In some cases, the player's situation had changed, making playing easier.

The game does not take extra time from my everyday life, as I will go jogging or go to the university or to the store in the city anyway. (ID 345, female, 27).

Moving to the city from the countryside, it's more reasonable to play here. (ID 312, female, 21).

The **positive aspects** of playing continued to be important. Again, exercise and outdoor activities interested the players, and having a reason to go out and walk was motivating. This was especially important for some respondents who were depressed and did not have the energy to go outside otherwise. Getting to know one's surroundings by playing the game remained a motivation.

It is also a good reason to walk instead of taking public transportation, and a wonderful way to get to know new places in an otherwise familiar city. (ID 754, female, 39).

Pokémon Go makes me continue exercising, which I would not have the energy to do otherwise due to being depressed. (ID 2185, other, 17).

While the game **mechanics** stayed in the margin when describing the reasons to get into the game, they arose as one of the main reasons to continue playing. Collecting, evolving, hatching eggs and battling were mentioned.

Hatching eggs is addicting. I walk/bike nowadays more in order to hatch eggs. (ID 1925; female, 23).

The **social features** were an important reason to continue, whether wanting to meet new people while playing or playing together with friends or family. The game functioned as an easy way to connect people together and create a feel of community. Some liked to compete or compare progression with others, while others wanted to help or teach others to play the game.

Community and sociability. The game alone does not keep my interest, but is a splendid addition to social situations. (ID 219, male, 27).

Closely connected to social features, respondents explained continuing to play due to **social influence**. This could mean parents wanting to be up to date and informed about their children's hobby or avoiding being left out of social circles when all friends were still playing the game.

Because all my friends play. I don't want to stand out from the

Table 4

The reasons to continue playing Pokémon GO.

Category	N	%	Codes
Progression	1056	51.5%	Personal goals, advancement, joy of discovery, collecting
Situation	397	19.4%	Hooked, habit, something to do, commitment, change of area, opportunity, weather, free, game status, events, technological upgrade
Positivity	346	16.9%	Exploration, exercise, outdoors, play, health, own time, relaxation
Mechanics	305	14.9%	Collecting, searching, hatching, evolving, fighting
Social features	282	13.8%	Helping, competition, sociability, looking for company
Social influence	256	12.5%	Friends, children, partner, siblings, family, relatives, others
Interest	250	12.2%	Interesting, fun, visuals, new, concept, good game
Expectations	234	11.4%	Game updates, curiosity
Nature of the game	102	5.0%	Rewarding, challenge, easy to play, variety, surprising
Previous experiences	78	3.8%	Brand, familiarity
Keeping up	14	0.7%	Keeping up, profession
Technology	6	0.3%	Location-based, functionality, AR

crowd. (ID 2464, male, 12).

Interest continued being somewhat important, meaning that the game continued to feel, for instance, interesting or fun.

[I]n its most parts very excellent implementation makes the game feel interesting and fun from day to day. (ID 2454, female, 22).

Some reported continuing to play because of future **expectations** for the game. They were curious about how the game was going to change or waiting for a specific update. Some were even threatening to quit if the game would not change “for the better”.

The game has such an inconceivable potential to develop for the better, this is unquestionably the biggest and the most important reason. (ID 1245, male, 34).

The **nature of the game** as a reason to continue included the casual nature of the game, making it easy to play, while others felt that the challenging nature was positive. The game provided surprises and was rewarding.

The casual nature of it. It is easy to play for an occasional minute or for hours and hours without much planning. (ID 1531, female, 26).

While **previous experiences**, especially with the Pokémon brand, were brought up as the number one reason to start the game, they were rarely mentioned as the reason to continue playing. Some brought up their love for Pokémon or similar activities to PGO, but these were in a small minority.

The love for Pokémon, I presume. When it's been with you for your whole life, the game will not go away in a hurry. (ID 1019, female, 25).

A few respondents mentioned staying in the game to **keep up** similarly as in the reasons to start the game.

[A]s a teacher I want to be up to speed on the youth's world of games. (ID 2570, female, 39).

Only a few respondents reported **technology** related reasons to continue playing, for instance liking the location-based properties or the AR features.

It's fun to take pictures of the Pokémon on a real background so to speak. (ID 2013; female, 27).

4.3. Reasons to stop playing Pokémon GO

We divided the reasons for stopping to play PGO to 9 different categories (see Table 5). These categories included 49 codes, each category including 2–12 codes. On average, one player reported reasons to quit from 1.8 categories.

The player's **situation** was the most frequently reported reason to stop. Getting bored, a lack of time or money, poor or cold weather, and health problems were mentioned, while some had quit due to their phone breaking or the game not working where they lived. Some had achieved their goal and had thus decided to quit, while others felt the hype was settling down.

I don't have the time to go and sit in the park or walk somewhere just after Pokémon. (ID 78, female, 28).

During the summer it was nice to walk outside, but now during the

fall I'm not that interested, and wouldn't even have the time. (ID 1088, female, 31).

While **progression** was a strong reason to continue the game, it was also a strong reason to quit. The leveling curve was seen to be too steep: the required experience points needed for a new level rose exponentially, while the earned experience points stayed the same, making it necessary to grind to advance. Similarly, when reaching a certain point in collecting the Pokémon, it became increasingly hard to find any new ones to advance towards the goal of catching them all.

Advancing started to be infuriatingly difficult at around level 20: you never get feelings of accomplishment when you never get on to the next level and there are not many brand new Pokémon either. (ID 1762, female, 23).

Players were bothered by the various **problems** in the game. Bugs, the game crashing or not registering the walked distances properly were mentioned. The respondents criticized the unequal gaming possibilities due to the Pokémon and PokéStops being concentrated to city centers. In addition, some disliked that you needed to keep the game active at all times even when playing passively. This caused the battery to drain.

I quit shortly after the publication because the game was infinitely buggy. If the game had been anything other than a Pokémon game it would probably be played by hardly anyone, and you could not publish such a buggy game. (ID 1514, other, 27).

Because the GPS did not work properly, the game did not register all the length of my walks. It felt a bit pointless to walk 5 km when the game then registered maybe half a kilometer. (ID 1665, female, 34).

The **shortcomings** of the game, especially the lack of content, were seen to be problematic. There was no endgame for players who had already advanced further, and the game was seen to be too shallow and simple. Some players would have wanted more features or more Pokémon.

There was nothing new to do in the game and my interest slowly decreased until I quit. (ID 1282, male, 22).

At the moment the game is a walking simulator with a Pokémon theme. (ID 1516, female, 21).

The game design and some of the game **mechanics** were disliked or seen to be faulty. Especially the battle system was criticized for being over-simplified and for not feeling like a battle against another player. Searching mechanics were seen as imperfect, and the catching mechanics were sometimes frustrating when you would lose many Poké Balls on one Pokémon or when the Pokémon fled. The game stopping to measure movement if the speed was too high was criticized, claiming that the game discouraged cycling.

PVP [player versus player] is pretty passive (the other player is not actually “present” as in Shadow Cities in its time, where group fights were possible too). (ID 1652, female, 36).

It is ridiculous that as an above level 20 player under 100 cp [combat power] Pokémon don't always get caught with the first ball. (ID 2024; female, 23).

Different aspects of the **nature of the game** were brought up as the

Table 5

The reasons to quit playing Pokémon GO.

Category	N	%	Codes
Situation	63	53.8%	Time, health, addiction, boredom, reached goal, deleted for space, hype down, weather, phone not working, situation changed, internet connection, money
Progression	35	29.9%	Slow progress, grinding, repetition, no new Pokémon
Problems	32	27.3%	Technical problems, battery usage, game always on, slow performance, incomplete, lack of content in area
Shortcomings	25	21.4%	Lack of new things, no endgame, missing features, missing content
Mechanics	24	20.5%	Battle system, searching, demands movement, does not encourage movement, cannot use a bike, escaping Pokémon, losing Poké Balls, poor design
Nature of the game	16	13.7%	Unrewarding, no challenge, too random, bad luck, competitiveness, lack of sociability, shallow, too simple
Changes	10	8.5%	Poor updates, change to worse, closing third-party applications
Social influence	9	7.7%	Others, children, friends, partner, cheating
The company	9	7.7%	Communication, lack of trust

reason to quit. These included the game being unrewarding or random in its rewards, lacking challenge, being too competitive, simple or shallow, or just not social enough. Some explained that the game should not require movement, while some felt that the game encouraged staying in one place instead of walking.

I simply did not want to go outside to walk around randomly, as it feels like the chance of finding the wanted Pokémon is the same as winning the lottery. (ID 618, female, 26).

The game evolving and changing was not always positive, as sometimes players felt that the game was **changing** for the worse. For instance, the removal of the nearby feature, which had made locating Pokémon easier made some to stop playing. Similarly, some complained about Niantic's approach to close down the third-party map services, which were used to show the locations of all Pokémon at any given time.

The changes the developer made ruined the game, for instance removing the Nearby feature was just lousy game development. (ID 207, female, 25).

Because Niantic doesn't fix the bugs in the game, makes stupid additional features and banned third party services. (ID 2079; male, 30).

The company behind the game was brought up. Niantic was criticized for their lack of communication to the public, and even claims of not seeing them as trustworthy arose.

The developers' behavior towards the gamer community was the last drop. (ID 2572, male, 23).

When quitting the game, **social influence** was brought up. If friends no longer played the game, some respondents explained not feeling like continuing the game alone. Other people could have a negative influence, for instance by cheating.

It is not nice to play the game in a vacuum. When other players' enthusiasm faded, so did my own enthusiasm towards the game. (ID 526, male, 30).

Everyone from my circle started to cheat in the game so I lost my interest in the game completely. (ID 1494, male, 25).

4.4. Relations to playing frequency

Two multiple-regression analyses (Tables 6 and 7) were conducted between the reasons for starting and continuing PGO identified in the qualitative steps of the study and the playing frequency (see Table 2).

Regarding the relationship between the reasons to start playing and playing frequency, the results indicate that the reasons to start playing both had a negligible total effect; the reasons explained only 6.3% of the variance of playing frequency as well as none of the reasons to start playing had a statistically significant relationship with the playing frequency (Table 6). In other words, the results indicate that the reasons for why players start playing do not have a more sustained effect on whether they play the game less or more.

There are several significant relationships between the reasons to continue playing and the playing frequency. The reasons to continue playing explained 31.2% of the variance of the playing frequency. The

Table 6The relationships between playing frequency and the reasons to start playing ($R^2 = 0.063$).

DV: Playing frequency $R^2 = 0.063$	Beta	p
Previous experiences	−0.014	0.541
Keeping up	0.004	0.828
Positivity	0.021	0.291
Situation	−0.005	0.819
Social influence	0.015	0.492
Mechanics	0.022	0.263
Nature of the game	−0.009	0.637
Social features	0.024	0.223
Popularity	−0.021	0.309
Technology	−0.026	0.189

Table 7The relationships between playing frequency and the reasons to continue playing ($R^2 = 0.312$), * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$.

DV: Playing frequency $R^2 = 0.312$	Beta	p
Previous experiences	0.044**	0.019
Keeping up	0.010	0.610
Positivity	0.061**	0.001
Situation	0.087***	0.000
Social influence	−0.032	0.130
Mechanics	0.058**	0.002
Progression	0.282***	0.000
Nature of the game	0.015	0.431
Social features	0.027	0.215
Expectations	0.077***	0.000
Interest	0.076***	0.000
Technology	−0.079***	0.000

results in full can be seen in Table 7. The strong relationship ($B = 0.282$) between progression motivations and continued playing is clearly stronger than the relationship between continued playing and other reasons to continue playing.

5. Discussion

The success of PGO has been the sum of several factors, but one clear reason for it is the brand. According to our findings, previous experiences, especially with the Pokémon franchise, were the main reason in achieving the player-base. Pokémon has several strengths. The brand is widely known, it has nostalgic value, and its characters are simple and attractive even if one is unfamiliar with them. The “gotta catch ‘em all” theme of Pokémon is well suited for a location-based game where the player can go to different places to find and catch different creatures.

Using existing intellectual property (IP) is a common practice in the game industry, and seems to be important in location-based games, as well. The announced upcoming location-based games use widely known

IP: Harry Potter (Niantic. (Forthcoming)), The Walking Dead (Next Games, 2018), Ghostbusters (4:33 Creative Lab, in press), and Jurassic Park (Ludia, 2018). Existing IP was not usually used in previous, less successful location-based games before PGO, such as BotFighters (It's Alive!, 2001), Shadow Cities (Gray Area, 2010), or Ingress.

According to our research, social reasons were important both in starting and continuing PGO. Social interaction is a common motivation to play (e.g. Yee, 2006; Hjorth & Richardson, 2017). While it has been argued that PGO fails to harness the social networking power compared to earlier location-aware games (Licoppe, 2016), our data shows that encounters do happen. Although the game lacks in-game communication channels and means to locate other players through the game, it acts as a social catalyst and increases the effect with features such as rival teams and lures that are shared by all players in the area. The requirement to play outdoors makes the players visible to each other, and including real-world locations into the game gathers crowds to the best play areas or to a sighting of a rare Pokémon. These features can assist the emergence of in-group closeness (Humphreys, 2016). According to Vella et al. (2017), PGO strengthens existing social ties, acts as an icebreaker, and creates a sense of belonging. Furthermore, social influence and the visibility of the players affects the hype through the bandwagon effect (Leibenstein, 1950): when people hear about the game frequently and see it being played, they may want to try it too.

Many respondents started or continued playing PGO as a form of exercise. Although studies of the long-term effects of PGO on health habits are needed, it has been studied that mobile apps that combine playing and physical activity may lead to substantial short-term activity increases and have the possibility of reaching sedentary populations (Althoff et al., 2016). PGO works as a gamified exercise app, since it offers motivational affordances (Hamari, 2015) for players to walk more than they normally do. PGO has other positive influences as well, such as self-treatment for depression or other difficult situations in life. Similar self-reported effects have been found by Kari, Arjoranta, and Salo (2017), as well.

Interestingly, the game being free of charge and using novel technology were rarely mentioned influencing the decision to pick up or continue the game. However, it can be speculated that both of these influence the decision more strongly than people have expressed. For one, games being free-to-play is already a widely-spread model, and might not be mentioned even if it was a significant motivation to pick up the game. It can be speculated that having a purchase price would have decreased the player base substantially.

The lack of responses around technology might be explained by the respondents not always expressing the technology-related reasons in specific terms, but instead describing the game feeling “interesting”, “fun”, or “novel”. A portion of these answers might refer to AR and location-based technologies since they were not mainstream game technologies before PGO. On the other hand, the location-based technology and AR features were in focus to reach the hype of the game, which was one of the main reasons to start the game.

Progression was by far the most common motivation to continue playing the game, and it also had the strongest positive correlation to playing frequency. Collecting all the Pokémon has been an important part of the Pokémon franchise since its beginning. PGO offers a wide variety of creatures to collect, some of which are rare and need a lot of effort to catch, making completion a long task even for the most active players. In addition, the individual Pokémon have different attributes, and catching the best of each creature extends the possibilities for collection. Advancing in player levels and collecting badges also serve the feeling of progression, increasing the feeling that there is always the next goal to achieve. PGO has since added even more content to collect, such as new Pokémon and male and female genders for each creature.

PGO differs from most successful mobile free-to-play games in that it does not restrict how long sessions the players can play. In free-to-play game design literature, allowing this type of “binge playing” is not recommended, and play sessions are advised to be limited unless paid

to continue (Luton, 2013). Instead, PGO has included enough long-term goals that even with constant playing it would take a long time to achieve them all. This then works as a retention mechanic: the player wants to return to the game to continue collecting items and to advance in the game (Paavilainen, Koskinen, Korhonen, & Alha, 2015).

The player's situation influenced the decision to continue, and while this is mostly out of the game developer's reach, PGO supports this by fitting well into the player's everyday life. The game follows the casual game design values well: acceptability, accessibility, simplicity, and flexibility (Kultima, 2009). It allows both short and long sessions anywhere and anytime, and the game can be played while doing something else. Furthermore, the launch during the summer increased the probability of both good weather and people being on vacation and thus having more time to keep playing.

The mechanics of the game were perceived to be fun enough to maintain the players' interest. Hunting and catching the Pokémon in the real world and hatching eggs by walking a certain distance were novel mechanics that still match well with the franchise and earlier Pokémon games. As the mechanics encourage walking outdoors, exercise and other positive effects of playing remained reasons to keep playing.

As a service-based free-to-play game, PGO must maintain its audience's interest and continue to offer new content for the advanced players. This constant evolution is something already expected by the players. Expectations for the changes and witnessing the development first-hand were mentioned as interesting enough to continue playing. In addition to content such as the new Pokémon creatures, the mechanics have evolved since the survey, and Niantic has periodically arranged special events that offer, for instance, more certain types of Pokémon or extra experience points. These can keep the experience fresh. In the meanwhile, some long-promised features, such as one-on-one battles have yet to arrive.

The most common category for stopping to play was the players' situation that is not related to the game design per se. Players got bored or there was not enough time to play anymore. Holidays were over, school had started, and the weather got colder. From the developers' perspective such reasons can be hard to tackle, but the game could be made more attractive for players who want to commit less time to play. After our survey, the developers have included daily bonuses to reward short, daily visits, and started to utilize weather information as a game mechanic. Depending on the weather, certain Pokémon appear more frequently and are more powerful. Earlier studies have shown that the utilization of context information in this way makes the game interesting for the players (Paavilainen et al., 2009). Almost half of the players who quit the game mentioned technical problems, shortcomings in game design, or poor game mechanics at least once as a contributing factor for their decision. These reasons are closely related to the negative game experiences reported in an earlier study (Paavilainen et al., 2017). These playability problems (e.g. Paavilainen, 2017; Paavilainen, Korhonen, Koskinen, & Alha, 2018) form a major factor to stop playing which the developers can avoid by improving the quality of the game. In a free-to-play game, this is especially important as the players can easily switch to another game if playability is deemed poor. The third major reason to stop playing was related to progression in the game, as the ever-increasing requirements to reach new levels were considered too harsh, thus resulting in boring repetition. Implementing more short-term goals between the higher levels could benefit those who lack the time and commitment to play regularly.

Understanding why people quit playing is important. Especially in free-to-play games, the players drop out easily during the first days (Hadji et al., 2014), and the competition is fierce. Keeping a customer is usually far more economical than acquiring new players (Seufert, 2014). Our findings provide insights on why people stop playing, and while improving the quality of the game is easy to understand, there are various personal reasons that should be studied further to see if there are aspects that could be improved with better and more inclusive game design. In addition, implementing a more nuanced and granular

progression system would be beneficial, as then players could achieve “small victories” more frequently rather than grinding towards long-term level goals. After our survey, gaining experience points has been made somewhat easier to foster faster progression, cooperative raid battles and trading have been included, and new generations of Pokémon have been brought into the game for variety.

Similar motivations to the ones in our study have been found in other PGO research, as well. Previous experiences is connected to being a Pokémon fan (Rasche et al., 2017) and nostalgia (Rasche et al., 2017; Yang & Liu, 2017; Zsila et al., 2017), social influence to reports from friends (Rasche et al., 2017) and friendship maintenance (Yang & Liu, 2017), positivity to exercise (Yang & Liu, 2017), combining fun and physical activity (Rasche et al., 2017), escapism (Yang & Liu, 2017), and outdoor activity (Zsila et al., 2017), social features to relationship initiation (Yang & Liu, 2017), social (Zsila et al., 2017), and competition (Zsila et al., 2017), popularity to media reports (Rasche et al., 2017) and everybody around me plays it (Rasche et al., 2017), and progression to achievement (Yang & Liu, 2017).

All three additional motives from Zsila et al. (2017) – outdoor activity, nostalgia, and boredom – were present in our data, as well. However, we linked boredom to a more general situation of the player that included, for instance, having something to do, being committed to the game, or having good opportunities to play the game. Although the situation is something outside of the game, it needs more attention, as it is an important reason to both continue and quit the game. Similarly, we linked fun and curiosity to a wider category of interest, whether the respondents reported the reason as fun, nice, interesting or something new or curious. In self-reported answers, it is difficult to say what the underlying reason in each case is.

Interestingly, while progressing in the game was the key reason to continue playing in our data, in the other studies this is in a smaller role. Only Rasche et al. (2017) as the other exploratory study has found it to be a major motivation to continue playing. In Zsila et al. (2017), it is not among the motivations the respondents can choose from, while in Yang and Liu (2017), the achievement category does not list collecting Pokémon as one of the items, which was the main reported reason within the progression category. In addition, our study found new motivations to play the game that have rarely been discussed in the previous literature: the game's popularity and the player's expectations for the game's future. These discoveries are important to take into consideration in the future with future studies of similar games.

Based on our findings, we recommend that the developers of location-based augmented reality games try to utilize well-known brands and IP in their games. Previous experiences with the Pokémon brand had the greatest influence for picking up the game. Games that utilize novel technology usually have a higher threshold for adoption, hence familiar characters, themes, and concepts lower the barrier of entry. For retention purposes, focus on versatile progression mechanics is important as it was the most common reason to continue playing. On the other hand, slow progression was the second most common reason to quit the game – thus underlining the importance of good progression mechanics. Lastly, the design quality in the form of playability should be a high priority as problems related to functionality, usability, and gameplay mechanics were common reasons to quit the game.

6. Conclusions

We studied why people start, continue, or quit playing PGO. The reported reasons to start playing were categorized into previous experiences, interest, social influence, popularity, positivity, technology, situation, keeping up, social features, mechanics, and the nature of the game. The starting reasons were not associated with how much the players played the game after adoption.

Progression, situation, positivity, game mechanics, social features, social influence, interest, expectations, nature of the game, previous experiences, keeping up, and technology were reasons to continue

playing. Continuance reasons were much more clearly associated with playing frequency than the reasons to start playing the game. Progression, situation, positive aspects, mechanics, interest and expectations were positively and statistically significantly associated with playing frequency, whereas technology was negatively associated, indicating that the novelty of the technology might wear off quickly.

The player's situation, various problems, shortcomings, poor game mechanics, slow or difficult progression, the nature of the game, changes, the company behind the game, and social influence were mentioned as reasons for quitting the game.

This paper provides contributions for both academics and practitioners. We have revealed key reasons why players start, continue, and stop playing PGO through a qualitative survey. Our study complements the earlier research, and has found new, important motivations for playing or quitting the game. These reasons should be taken into account when further studying and designing location-based AR games. After exploratory studies have revealed the key reasons for playing, these categories can now be transformed into variables, and used and verified through quantitative studies.

Declarations of interest

None.

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ARTICLE VII

The imbalanced state of free-to-play game research: A literature review

Kati Alha

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Ludo-Mix*

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The imbalanced state of free-to-play game research: A literature review

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ABSTRACT

As free-to-play games have increased their economic value, the research interest on them has increased as well. This article looks at free-to-play game research conducted so far through a systematic literature review and an explorative analysis of the documents included in the review. The results highlight an excessive focus especially on behavioral economic studies trying to maximize the player bases and profits, while other aspects, such as meaningful game experiences, cultural and societal implications, or critical review of the phenomena have been left in the marginal. Based on the review results, this article suggests four future agendas to reinforce the lacking areas of free-to-play game research.

Keywords

free-to-play, freemium, games, literature review, research agendas

INTRODUCTION

The game industry has changed. Revenue models have shifted from retail products to service relationship between the publisher and the customer (Sotamaa & Karppi 2010). The industry has grown due to changes in the business models and the consumption of games. By offering the game for free, games can reach wider audiences, and by offering in-game content for a fee, companies can still generate considerable income. This revenue model called free-to-play represents one of the most notable forces of change in the game industry.

After reaching economic success, the free-to-play revenue model has anchored itself deeply and substantially in the game ecosystem. The model has influenced both the way games are developed as well as how they are consumed. To understand the full importance and influence of free-to-play games, they should be studied from multiple perspectives and with diverse methodological toolkits.

The amount of research on the topic has been increasing, and the purpose of this article is to see how it has addressed the free-to-play game phenomena. This is done through a systematic literature review. The review scope was intended to offer a comprehensive picture of free-to-play game research at a point when some research has already been conducted, but it is still possible to examine the topic with an exploratory approach.

This is the first literature review on free-to-play game research to take such a holistic view. The descriptive approach allows for a more detailed view on what the research has already covered and how, and what areas are still lacking. After analyzing the state of free-to-play research, four important future research agendas are introduced.

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BACKGROUND

Free-to-play games are games that can be downloaded and played for free, but which include in-game purchases for extra content or other advantages. The roots of free-to-play games lie in South Korea and China, where they were used as a means to fight online piracy. The model quickly proved effective in the Asian-Pacific region due to its flexible pricing (Davidovici-Nora 2013) and spread to the West. One of the key reasons for the popularity can be traced back to social network games, and their arrival especially to Facebook (Mäyrä 2011). After the first success stories such as *Vampires* (Commagere & Olson 2007) and *Mob Wars* (Maestri 2008), the number of social network games skyrocketed, and Zynga published their hits *Mafia Wars* (2009) and *FarmVille* (2009).

As the free-to-play game industry has grown more popular and profitable, the games have received considerable coverage in press, concentrating on the economic success and the negative aspects of gameplay (Alha et al. 2014). Throughout the age of social network gaming, the games were often rejected by large parts of gaming communities and many game developers, and the free-to-play monetization model started to receive a growing amount of critique. Zynga was labeled infamous due to their aggressive monetization and revelations of a small minority of players paying for the majority of the games' revenues. Zynga's games were seen as taking advantage of players, creating simple yet addictive games that often copied other games and encouraged problematic gaming and spending habits (Alha et al. 2018).

Another, even more remarkable peak for the model occurred during the rise of mobile games. The Apple and Android platforms provided new avenues for free-to-play games while the popularity of social network games started to decline. This has escalated to a point where almost all top-grossing apps on mobile use the free-to-play model, from which majority are games (Alha et al. 2016). The success of the model has allowed it to spread to most platforms and genres, including influencing the design of games using other revenue models (Davidovici-Nora 2013).

Although free-to-play games have moved from social networks especially to mobile and PC platforms, their origin is still visible. While many of the games use less aggressive monetization mechanics and have evolved from the earlier generations, the attitudes towards the games are still influenced by the times of Zynga (Alha et al. 2014, Alha et al. 2018). The problems are still evident in games where the developers make most of their money from a small number of players.

There are problematic aspects regarding fair play as well. If in-app purchases give an advantage to paying players, the game can become pay-to-win and thus unfair (Lin & Sun 2013, Alha et al. 2018). Both paying and non-paying players should be important for the developer. While the paying players bring the actual revenue, ultimately it is the non-paying players who create the feeling of community (Sotamaa et al. 2011, Tyni et al. 2011).

From the developers' perspective, competition is fierce and the same games and game companies dominate the charts for profitability (Nieborg 2016). Designing free-to-play games has its own challenges, as the monetization model has to be integrated as part of the gameplay. The design of free-to-play games is strongly metrics-based, which means the developers deduce from data which gameplay features or items are the most popular and lucrative, and then choose in which direction develop the game. When looking at the statistics, developers may easily pursue faster revenue instead of trying to create better experiences and lasting interest (Alha et al. 2014).

REVIEW PROCEDURE

The review procedure followed a five-step framework described by vom Brocke et al. (2009): 1) Definition of review scope, 2) Conceptualization of the topic, 3) Literature search, 4) Literature analysis and synthesis, and 5) Research agenda. The scope was introduced in the Introduction chapter, while conceptualization was done in the Background section.

Scopus was chosen as the database for the literature search, as it indexes a wide variety of relevant journals, conferences, and book chapters. To get as complete a collection of related documents as possible without getting too many unrelated hits, the search words included “game*” (to cover both *game* and *games*) and “free-to-play” or “freemium” (to include both terms commonly used to refer to the free-to-play model). To find documents that included the topic in a relevant way, these words were set to be included in the title, abstract, and/or the keywords. The query was targeted at journal articles, conference papers, and book chapters. The time frame was set to include all the documents published in 2018 at the latest. The final query used on Scopus was thus:

```
TITLE-ABS-KEY ((game*) AND ((free-to-play) OR (freemium))) AND PUBYEAR < 2019 AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp") OR LIMIT-TO (DOCTYPE, "ch"))
```

The final search was conducted in May 2019 and resulted in 116 documents. From these, 1 document was removed as a duplicate, 2 documents due to the full version being unavailable, 2 documents due to the paper being written in a language other than English, and 2 documents for being non-academic documents.

The abstracts of the remaining 109 documents were examined, and in this process, 13 documents were removed for being false hits. This included documents that 1) included the phrase “free to play” in a meaning different from a revenue model, 2) included “free-to-play” as a keyword despite not discussing it in a relevant fashion in the document, 3) referenced freemium connected to something other than games, 4) mentioned free-to-play model in the abstract as a reference or a side note, but did not discuss the model further, and 5) discussed a free-to-play game, but not its free-to-play nature in any relevant manner. In addition, 4 documents were removed at this phase due to there being more than one similar paper by the same authors. In these cases, the later and more extensive journal publications were included.

In the end, 92 documents were included in the actual review process. These were coded by publication year, publication type, data type, method type, subject area, and country. Publication type, data type, and method type were retrieved from the documents themselves, while the rest of the data was collected from Scopus. This descriptive data is introduced in the Results chapter.

Due to the manageable volume of the documents, it was possible to take a qualitative approach to the analysis. Therefore, each document underwent a textual analysis based at least on its abstract and conclusion, and categories of research topics were formed based on this analysis. The results are described in the Exploration of the research sub-chapter.

Finally, four research agendas were identified from the synthesis of the previous research, focusing on the research areas that are lacking and require more attention from the field. These agendas are introduced in the Future research agendas chapter.

RESULTS

Descriptive data

Figure 1 shows the annual number of publications. While the first paper is from 2009, a slight increase in research happens in 2011, after social network games had risen into popularity and the model had gained more attention. In 2014-2015 the research increases substantially, which coincides with and after the free-to-play model had reached success on mobile platforms.

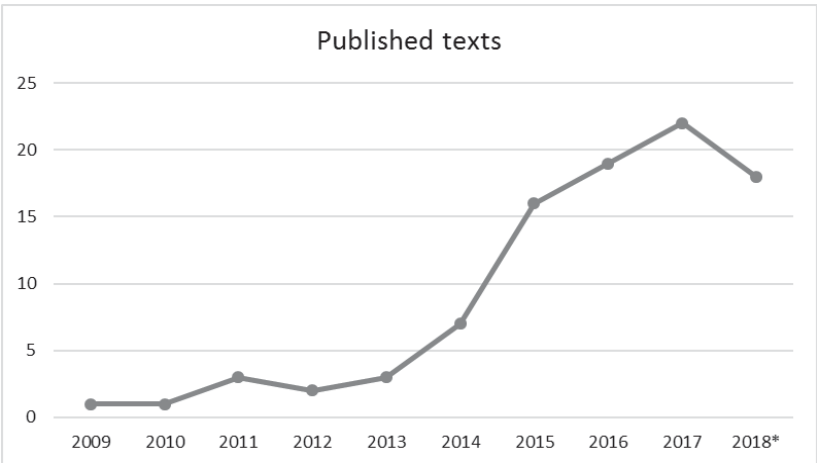


Figure 1: Included texts by their year of publication. *Due to possible delays in publication and adding entries to the databases, the number of studies at the time of the data-gathering process might be proportionately lower than in other years.

The division of document types can be seen in Table 1. The included documents are divided roughly equally between journal and conference papers, while only four book chapters were among the documents. The data and analysis methods are listed in Table 2, which shows an emphasis on the quantitative methods over qualitative and mixed methods and log and survey data over, for instance, interview and game analysis data.

Document type	Frequency
Full journal articles	46
Full conference papers	32
Book chapters	4
Short conference papers	4
Extended abstracts	2
Work-in-progress	2
Workshop papers	2

Table 1: The document types of the included documents.

Data type	Frequency	Method type	Frequency
Log data	25	Quantitative	44
Survey data	24	Qualitative	15
Interview data	11	Mixed methods	5
Game analysis data	4		
Research articles	4		
Forum posts	2		
Psycho-physiological data	2		
Game magazines	1		
Financial data	1		

Table 2: Data and method types in empirical documents.

Figure 2 shows a heavy concentration of the research in Europe and North America. This is especially noteworthy, seeing as there are substantial differences in the free-to-play game market between the eastern and western societies (Page 2012). Therefore, the research mostly portrays the western free-to-play model.

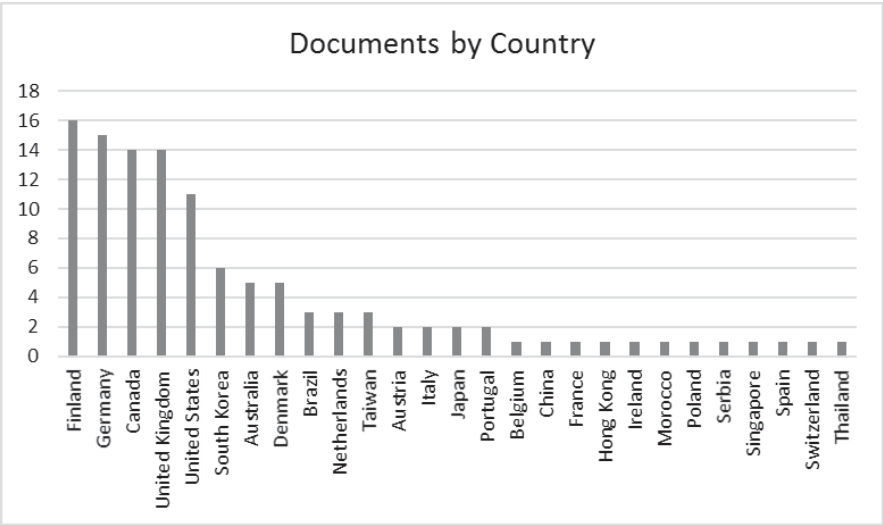


Figure 2: Included documents by country.

The division of the subject areas of the documents is shown in Figure 3. Computer Science is included in 43.8% of the documents, while Social Sciences and Arts and Humanities are represented in 8.5% and 6.5%, respectively.

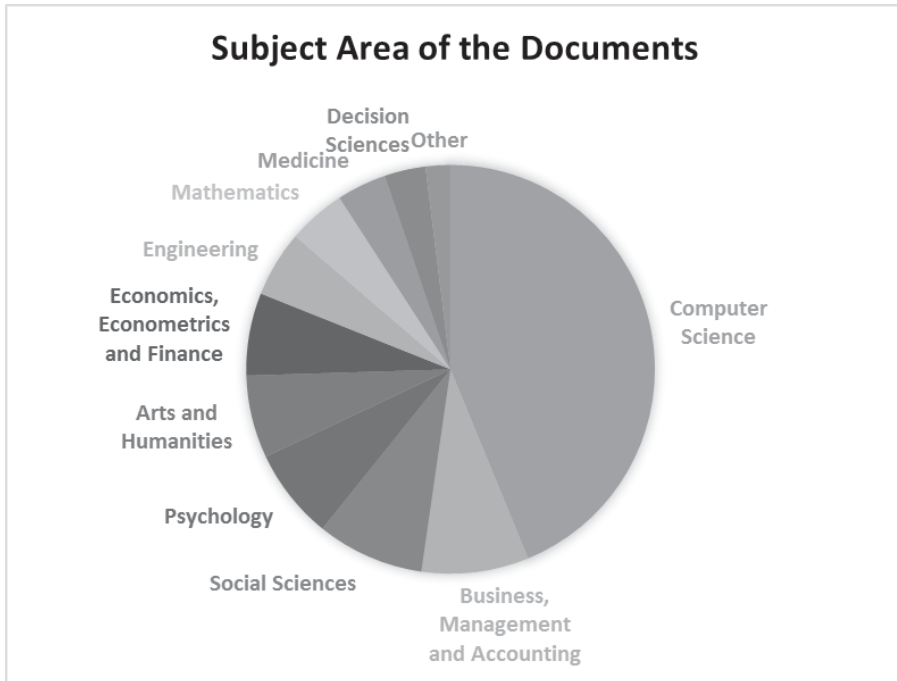


Figure 3: Included documents by their subject area.

Exploration of the research

Disengagement and retention

A relevant portion of the documents concentrate on predicting and decreasing disengagement and churn, the act of customer abandoning a product entirely. In free-to-play games, most new players leave already during the first days, so predicting and preventing early customer churn is important (Milošević et al. 2017).

Many of the reviewed documents examined the best ways to measure, predict, and prevent churn. Castro and Tsuzuki (2015) proposed a frequency analysis approach to predict churn. Lee et al. (2016) created a model for predicting churn in free-to-play games, tested in a mobile free-to-play role-playing game. Lee and Yang (2017) proposed a method for optimizing live service on mobile free-to-play games. The method was evaluated in a free-to-play role-playing game, showing that it can improve retention.

Hadiji et al. (2014) used live data from multiple games to model and predict player churn. They developed and presented a prediction model with a machine learning approach which would not rely on design specific features. Similarly, Xie et al. (2015) aimed to reach better generalizability in predicting player disengagements.

Runge et al. (2014) focused on predicting and preventing churn for high-value players in casual social games. Giving free in-game currency did not significantly affect the churn rate or monetization of the players. Personalized push notifications worked better in a study by Milošević et al. (2017), who employed early churn prediction and prevention, and were able to reduce churn up to 28%.

Lebres et al. (2018) studied the reasons for player drop-out in a free-to-play massively multiplayer online game, showing that latency and performance issues and game

fairness were the most relevant drop-out factors. In a study by Wu et al. (2009), continuance motivation had a strong impact on players' stickiness intention. In a study by Ross (2018), different definitions of retention were examined, and their ability to predict monetization tested with 51 free-to-play mobile games.

In-app purchases and purchase behavior

According to Hanner et al. (2015), existing models of predicting purchase behavior from other similar domains do not function well in mobile free-to-play games and should be redesigned. This call has been answered as in-app purchases have gained a lot of attention in free-to-play game research, and many models have been created to best predict purchase behavior.

Already in 2010, Lee et al. (2010) used a General Bayesian network to look at users' intention to spend money on in-app purchases. Park and Lee (2011) explored the value of virtual items in free-to-play games by modifying the theory of consumption values. The authors then developed a new construct based on the modified theory. Chou and Kimsuwan (2013) studied factors affecting purchase intention in a free-to-play game in Thailand. Perceived enjoyment value, monetary value, and promotion programs were found to have significant positive influence on the purchase intention. According to a study by Ernst (2018), there is a negative correlation between patience and spending money on in-app purchases, while in a study by Jang et al. (2018), psychological needs of autonomy and relatedness were positively and competence need negatively correlated to making in-app purchases.

Looking at the differences between paying and non-paying players in social casino games, Gainsbury et al. (2016a) found that paying players were more likely to be younger, male, speak a non-English language, and have a university degree. Paying players were more likely to be more engaged and play more frequently, and were more motivated by social interaction in the games. In a similar study, Kim et al. (2017) found that paying players reported significantly higher levels of impulsivity, rewards sensitivity, and problem gaming severity, but not competitiveness.

Shi et al. (2015) examined the relationship between social dynamics and purchase decisions of free-to-play social game players. The authors found that both formal social groups within the game and informal social connections influenced purchase decisions. Contrary to this, the results by Drachen et al. (2018) in casual mobile games indicated that social activity did not correlate with becoming a paying player. The authors speculate that social features are relevant in predicting customer lifetime value in games where the social interaction is deeper.

Using competing risks approach, Chen et al. (2017) studied the relationship between paying hazard, the point where a player starts to pay for the game, and quitting hazard, the point where player quits the game. According to the authors, understanding how various aspects of customer behavior contribute to these hazards helps to predict the actions and influence them.

Voigt and Hinz (2016) predicted customer lifetime value from initial purchase information. Customers who made a purchase early, spent a significant amount of money on the initial purchase, and used credit cards to purchase credits, represent higher lifetime values. From the dataset, only 1% of the user base accounted for almost 85% of total revenue, and the authors stress the importance of identifying these high-potential customers as early as possible. In a study by Hanner and Zarnekow (2015), the authors deduced three hypotheses for purchase behavior, which were then confirmed: 1) the probability for conversion decreases over time before the user starts playing since the launch of the game, 2) the probability of the user's

retention increases with every purchase made, and 3) the amount of money users are willing to spend increases with every purchase. Sifa et al. (2015) used two prediction models, from which one predicted whether a player will become a paying user, and the other the number of purchases that will be made, while Kim et al. (2018) used social features and machine learning algorithms in link prediction in free-to-play mobile games.

Hamari (2015) studied why people buy virtual goods in free-to-play game services. The results show that enjoyment of the game reduces the willingness to buy virtual goods while it increases the willingness to continue playing. Continued use then has a positive prediction on purchase intention. Attitude towards virtual goods and peer attitudes strongly increase purchase intention. According to Hamari et al. (2017b), dimensions of service quality positively predict the continued use intention, but not the willingness to make in-app purchases.

Dew and Ansari (2018) developed a model-based approach to understand and predict user spending patterns. The data was visualized for easy interpretation. Bertens et al. (2018) created a machine-learning recommendation system for free-to-play games that offers purchases to players who might be most inclined to spend money.

Salminen et al. (2018) studied the effects of currency conversions in laboratory settings. Multiple conversions did not make the players more willing to spend money, but on the contrary made them more cautious. Players were most willing to pay to unlock new game content. Rietveld (2018) studied how much money players were willing to spend on a game depending whether it was assumed to be free or paid. Participants were more willing to pay more when they thought the game was premium, and were willing to spend more time playing it.

Hamari et al. (2017a) formulated a study instrument to explore concrete motivations to make in-app purchases. The purchasing reasons converged into unobstructed play, social interaction, competition, economic rationale, indulging the children, and unlocking content. Flunger et al. (2017) examined previous research on purchase motivations and introduced seven strategies for developers to implement. Based on the results of the literature review by Hanner (2016), the research has been shifting from usage intention to purchase intention. Hanner further notes that contrary to expectations, these two are not usually studied together.

Advertising and free-to-play games

Burns et al. (2016) studied how in-game advertisements affect retention and created a model that could be used to measure user-level retention. By examining 21 free-to-play mobile games, the study discovered only a weak relationship between in-game advertisements and retention. The paper claims to stand in opposition to the shared presumption that in-game advertisements would have a strong negative influence on in-game behavior.

Mehrtens et al. (2018) formed a methodology to develop cluster data into sensible and homogenous segments to help game designers and consultants to identify variables and create automated decision-making algorithms to optimize in-game advertising, while Murray and MacIsaac (2015) modified the Sethi model to reach more accurate means to find optimal advertising strategies for free-to-play games.

Dheandhanoo et al. (2017) utilized data analytics of gameplay metrics to track an advertising campaign for a mobile free-to-play card game. By comparing the metrics before, during, and after the campaign, the authors were able to provide recommendations to improve future marketing campaigns.

Luna and Golightly (2017) compared free-to-play and advergaming strategies, and studied how they influence the enjoyment of mobile games through GameFlow (see Sweetser and Wyeth 2005). Both strategies can cause disruptions, which were seen as negative by the players, yet usually tolerated. Advergaming was preferred over free-to-play as it did not break the continuity of the game.

When compared to studies on in-app purchases, studies on advertising are still in a small minority, even though most free-to-play companies at the moment get their main revenue from advertising instead of in-app purchases (Nieborg 2016).

Best practices for the industry

In addition to disengagement, in-app purchases, and advertising, several documents tried to uncover other best practices for game development. Seidl et al. (2018) analyzed when and how game developers should transform a game from pay-to-play to free-to-play, while Voigt and Hinz (2017) researched when launching new game servers in free-to-play massively multiplayer online games is advisable. Burger et al. (2016) analyzed match histories and statistics to develop models that could reduce latency in a multiplayer online battle arena game. Civelek et al. (2018) researched and gave guidelines for optimal strategies for pricing and game challenge level in monopoly and duopoly settings on the free-to-play mobile game market.

Xie et al. (2016) tried to solve the problem of predicting player behavior in cases where the player class distribution is biased. Gagné et al. (2012) developed a system to visualize player actions inside a casual free-to-play real-time strategy game. The system helped the developers to understand how players learned the game and how they played it. Saas et al. (2017) clustered player activity data in two free-to-play games to find patterns of player behavior to evaluate game events and game-business diagnosis. This data was then transformed into visualization to help intuitive interpretation of it.

Drachen et al. (2017) discussed the need to develop a common understanding of the key concepts of free-to-play mobile games. As the field is young, there is a lack of shared knowledge, understanding, and terminology. They suggested formation of stylized facts for analytics of the field. In order to achieve this, the authors call researchers to work towards clear definitions and assessing, evaluating, and building empirical evidence.

Moirn et al. (2016) examined the effect of game tutorials on casual and hardcore players in a free-to-play game. The results indicate that casual players need tutorials, and their presence improves purchase and continuous use intentions. However, for hardcore gamers the tutorial conditions caused no differences.

Harviainen et al. (2018) organized workshops with users and key stakeholders of free-to-play games to find alternative pricing models for them. The players optimally wanted a hybrid model that allows for various options. The participants reported that their motivation to pay was rather to reward the developers for good design instead of acquiring more content or play more easily. Feltwell et al. (2017) described a provocative augmented reality game concept inspired by and possibly critical of Pokémon Go. The idea included capturing the likeness of homeless people from their real environment with face-recognition technology.

Industry studies

Only a few of the studies researched game companies and their practices. Koskenvirta and Mäntymäki (2015) studied how small and medium-sized free-to-play game companies use game analytics at a time when the understanding of and research on

game analytics were still lacking. The results showed that analytics are central to freemium game development and are used to assist design, reduce risks when launching new games, and to communicate with investors and publishers.

Vanhala and Kasurinen (2016) studied and compared five game companies based on how they understand their customers. Mobile game companies did not provide their players as many possibilities to build their virtual identity as those creating console or PC games. The article further compared customer-focused development and customer-driven development.

Free-to-play model characteristics

Some of the studies tried to uncover the free-to-play characteristics, either by examining the games or their features. Tyni et al. (2011) performed a close reading of *FrontierVille* (Zynga 2010) to reveal the characteristics of free-to-play social network games and to function as a starting point for studying social network games.

Gruning (2013) performed a textual and structural analysis of the social network game *FarmVille 2* (Zynga 2012) with a focus on the values available in the digital objects within the game. The virtual items that have no in-game use value could be valuable only for their rarity and to construct identity. However, the game's lack of community undermined this potential.

Evans (2016) examined three mobile free-to-play games and how they monetize the impatience of players. The article discussed the apparent open access of free-to-play games, which is then commercialized and monetized. Evans calls for the attention of game studies to be directed towards examining the relationship between commercial motivation and game design, and for media and cultural studies to consider the social, cultural, economic, and political implications of impatience.

De Medeiros Filho et al. (2018) created a framework of free-to-play games acquisition, monetization, and retention (ARM) strategies comprising of 45 elements, 8 subcategories, and 3 main categories. These elements were seen as helpful when designing free-to-play games, but could also aid research of ARM strategies in games. Davidovici-Nora (2017) expanded the ARM components to include free-to-play e-Sports dynamics by going through *League of Legends* (Riot Games 2009) as a case example.

Heuristic evaluation

Paavilainen et al. (2015) examined playability problems in social network games in two studies including heuristic evaluations, and found and confirmed domain-specific playability problems originating from the design characteristics of social network games: boring gameplay, click fatigue, interruptive pop-ups, friend requirements, spammy messages, and aggressive monetization. New heuristics for evaluating free-to-play games were presented by Paavilainen et al. (2018).

Petersen et al. (2017) created a lab-based mixed methods approach to evaluate the onboarding phase in free-to-play mobile games. By combining physiological measures and self-reported proxy measures, the authors evaluated these research techniques, finding physiological measures to be a valid method to evaluate mobile games when supported with qualitative measures. In another study related to the same data and methods, Thomsen et al. (2016) uncovered ten onboarding design heuristics for free-to-play mobile games.

Free-to-play games and gambling

The connections between gambling and social casino games have been studied on several occasions. Namely, concerns that social casino games could work as a gateway to gambling games and further on to gambling problems have been raised.

Kim et al. (2014) studied the migration to gambling with a longitudinal survey for casino game players that had not previously gambled online. After six months, 26% reported having migrated to online gambling. The only found predictor for the migration was engagement in micro-transactions. In another study on migration, Gainsbury et al. (2016b) found that social casino games increased gambling for some, and the most commonly reported reason for the transition was the desire to win real money and gain more excitement. In an exploratory study by Gainsbury et al. (2014) with 10 social casino game players, social casino games were described as a safe activity, possibly a substitution for gambling, while they might have a problematic impact for some at-risk players.

In a literature review, Wohl et al. (2017) concluded that while some people will migrate to gambling games from social casino games and a small portion of those people may develop gambling problems, this transition was not inevitable or unidirectional. Social casino games may have positive consequences as well, such as functioning as a proxy for gambling for disordered gamblers.

Kinnunen et al. (2016) examined and compared the use of money between free-to-play games and gambling games through an interview study. While gamblers separated play money from other money, for free-to-play gamers the money was concerned as the same as used for other recreational activities. The separate framing could protect players from problematic use of money, and money management could become relevant to free-to-play game players, as well.

Experiences and attitudes

Vázquez and Consalvo (2015) studied fairness and cheating in social network games through an online survey study. According to the results, players often dismiss the seriousness of social network games, and thus cheating was either not needed or not a part of gameplay expectations. Paying money to advance in the game was already seen as an accepted mode of playing and not considered cheating. Social network games intertwine into their platform, as sometimes the formal rules were seen to be determined by Facebook, sometimes by the game's code.

Lin and Sun (2011) examined whether the free-to-play model has an influence on play experiences and attitudes by analyzing two game discussion forums in Taiwan. Free-to-play games were considered inherently unfair by some, as they divide players into paying and non-paying player sub-groups. Non-paying players may suffer from boring and restricted gaming experiences and might never have the possibility to beat the paying players, while getting something through paying might also decrease the fun of the game and make achievements feel less real.

Paavilainen et al. (2013) interviewed Finnish Facebook users about their perceptions and experiences with social network games. Facebook games were regarded more as single player games with a social twist than truly social. The games managed to provide a wide spectrum of playful experiences for different needs, while also suffering from their design characteristics. Interviewees were reluctant to pay for them and saw in-game purchases in a negative light. In a similar study on free-to-play games in general, Alha et al. (2018) studied paying players and their attitudes and experiences. Early free-to-play games were seen considered poor and exploitative, while newer, better game experiences had made interviewees feel more positive about

the model. Spending money on free-to-play games was not seen as negative, but had instead become a normal activity.

Paavilainen et al. (2017) studied player experiences in *Pokémon Go* (Niantic 2016), a location-based free-to-play game, through a qualitative survey study on positive and negative characteristics of the game. Positive experiences were related to movement, sociability, game mechanics, and brand, and negative experiences to technical problems, unequal gaming opportunities, bad behavior, and unpolished game design. Surprisingly, the augmented reality features, safety issues, or the free-to-play revenue model did not receive considerable feedback.

Addiction and problematic playing habits

The critical research approach to free-to-play games is typically connected to problematic playing habits. The connection between free-to-play games and Internet Gaming Disorder (IGD) was examined in a study by Dreier et al. (2016). From teenagers who played free-to-play games, 5.2% were classified as suffering from IGD. These players displayed higher psycho-social symptoms and higher degrees of perceived stress than non-problematic players. They also applied dysfunctional coping strategies more frequently and spent more money on games. ARPU (average revenue per user) was significantly associated with IGD.

Junior Ladeira et al. (2016) studied the effect of mobile free-to-play games on the well-being of children in Brazil. The authors state that free-to-play games that present high levels of escapism might be critical to the formation of experiential value. Regulation and public policies for games were called for to prevent children's dependence on games in relation to social life and compulsive consumption.

Gainsbury et al. (2017) found that playing and using money on social casino games was significantly positively correlated with symptom severity of problematic social casino game use. Soroush et al. (2014) studied the relationship between in-app purchases and self-control in *Candy Crush Saga* (King 2012), a casual free-to-play mobile game. The premise of the paper was that when facing frequent frustration and purchasing decisions in a free-to-play game, people with limited self-control may deplete this resource. Authors found that lower levels of self-control are correlated with money used in the game, but not with time played, addiction, or problematic playing habits.

Culture, society, and politics

Cantalops and Sicilia (2016) studied how an important narrative event in a free-to-play multiplayer online battle arena game *League of Legends* affected the use of related champions and the motivation to learn about them. While the impact on champion usage was not statistically significant, the event did increase the motivation to read and learn about the champions, story, events, and optimal builds for the game, influencing the players' game literacy.

Nieborg (2015) used theories of multisided markets and critical political economy to study *Candy Crush Saga* and its relation to connective platforms operated by Google, Apple, Facebook, and Amazon. The way players share game-related posts on the host platform generates value for the game, and King has managed to successfully repurpose and integrate their gameplay into social media, mobile platforms, and their business model. In the symbiotic relationship between the game and the platform, the game adds value for Facebook by offering games directly on their platform and by providing revenue through advertising. Nieborg calls attention to the long-term political implications and sustainability of the free-to-play business model.

Page (2012) examined the Chinese free-to-play massively multiplayer online game *Zhengtu* (Zhengtu Network 2006) through classical Chinese philosophy. The game allows power over other players through in-app purchases, making it pay-to-win, a feature often frowned upon in western free-to-play development. Page notes that unlike western gamers, Chinese gamers see their game selves more as an opportunity to improve their holistic selves instead of creating alternative selves. Similarly, the boundaries between the real and the virtual are not similar in Chinese philosophy to what they are in the West. Page stresses that it is important for researchers to consider the history and culture of the population when studying online behavior, and not to assume western gamers as the default player type. Heimo et al. (2018) looked at the free-to-play business model through Aristotelian virtue ethics. They claim that looking through this lens, free-to-play games can offer shortcuts to personal character development when paying to be better instead of improving oneself, possibly leading to laziness and passive lifestyle.

Möring and Leino (2016) discussed games always being a product of their time and influenced by economic, political, and cultural history. Free-to-play games are introduced as a prime example of our neo-liberal society, where players invest time and effort to develop skills when it is uncertain whether they will be of use or not. The authors note that game studies discourse still regards games as a romantic form of liberalism, while the neo-liberal capitalistic view might be better suited for the task.

In a critical take on the free-to-play model, Nieborg (2016) pointed out how data tracking and collection create privacy issues. Furthermore, the free-to-play market is now dominated by a few net advertisers who have the means to spend enough on player acquisition to keep their dominant position.

Free-to-play model in other application development

As free-to-play games have become successful, other games and game-related developers have started to look at them as examples. Especially studies related to games with a purpose have examined how to harness the attraction of free-to-play for the purpose of learning or improving something. Georgieva et al. (2015) and Meftah et al. (2017) studied the free-to-play model to understand the important features of the model that could then be used in serious games. Callaghan et al. (2014) and Madge et al. (2017) used game analytics tools and metrics previously used by the freemium industry to measure engagement in a serious game setting. In addition to serious games, Ketola (2014) presented how measurements used and refined in free-to-play games could be applied in software architecture decisions.

Games have also been developed with free-to-play mechanics in mind. Alanikula et al. (2014) described a game created to teach players about environmental education, where the money from in-app purchases went to charities devoted to the same issue. Dergousoff and Mandryk (2015) replaced in-app purchases with tasks that could be used in crowdsourcing, while checking whether the quality of the performed tasks was as good as in a laboratory setting. Dunwell et al. (2015) included energy mechanics commonly used in social free-to-play games and replaced paying with performing healthy tasks. Similarly, Dziedzic (2016) replaced in-app purchases with microwork and Mees et al. (2017) with math-based mini-games. While most studies use free-to-play as a positive example of how to improve other games or experiences, Dubbels (2016) discusses free-to-play experiences as unwanted in relation to gamification, noting that gamification should facilitate an immersive experience for the user instead of requiring tedious repetitive activities.

FUTURE RESEARCH AGENDAS

The review shows that quantitative studies on player behavior are well covered, and while further research on these topics is still needed, there are other areas that are left without much attention. Free-to-play games form such a major phenomenon that it needs to be studied from multiple perspectives; especially humanities and social sciences need to be involved. Future research agendas that arose from the review are introduced below.

Agenda 1: Industry studies to understand the practice of free-to-play development

The research is currently heavily focused on models connected to the economic side of the industry. The studies especially concentrate on predicting and preventing player disengagement and on in-app purchases, while some studies focus on how to best track player activity or study the effects of in-game advertising. This focus is understandable considering the major economic value of the free-to-play industry.

However, while a significant number of the documents claimed to have successfully created new models or improved previous models to be directly implemented in the practice and have even made the tools easier to use by visualizing the results, there is not much knowledge as to whether and to what degree free-to-play companies actually use these models and methods. Only one of the studies looked at the use of analytics in game companies (Koskenvirta and Mäntymäki 2015).

To understand the practice of how free-to-play games are actually developed, we need to approach game companies and study their practices. As the free-to-play game industry is widely spread both in numbers and in platforms and game types, there is presumably a wide variety of practices involved in the creation of the games. There is a lack of studies understanding the current game development process altogether, and even less research considers free-to-play game development.

Agenda 2: Qualitative studies to understand player experiences

The majority of the documents had quantitative data and methods, using either survey data from players or log data directly from the game provider or a service. This is connected to the focus of the studies in general, as these are typical methods in computer science, business, and economic studies.

However, to understand the experiences behind the quantitative data, we need to explore them from another angle. Solely focusing on analytical data and metrics can improve the retention and revenues in the short-term, yet might not always lead to better game experiences. This can hurt the sustainability of the free-to-play model in the long-term.

To delve deeper into the variety and meanings free-to-play games offer, qualitative methodological toolsets are needed. Some studies include player interviews as the main method (Paavilainen et al. 2013, Alha et al. 2018), and increasing the volume and target of these studies can teach us more about the reasoning and meaning behind the numbers.

Agenda 3: Close readings to understand free-to-play game characteristics

Close readings and case studies of games such as Tyni et al. (2011), Gruning (2013), and Evans (2016) help to understand free-to-play games and how they work. As free-to-play games evolve and change quickly, we need to keep updating our knowledge of the most recent titles.

Most of the studies either concentrate on a specific platform or genre, while some address all free-to-play games as one entity. We still have little understanding of the differences between free-to-play game types, while the model continues to cover an increasingly wider variety of games and platforms. The gameplay and attitudes towards different types of games vary significantly. Close readings could reveal more about the common features of a fractured field of games. The need for understanding different business segments of different types of free-to-play games has also been noted by Flunger et al. (2017).

Agenda 4: Studies to understand the meanings of free-to-play games in our culture, society, and politics

Free-to-play games are often regarded as an inferior or less serious mode of gaming (Paavilainen et al. 2013, Alha et al. 2018), and this might influence the researchers' motivation and will to study the games as meaningful objects or experiences. However, these games can provide meaningful experiences (Paavilainen et al. 2013), facilitate the formation of gaming communities, and help tie meaningful relationships (Alha et al. 2018).

Especially as free-to-play games represent a vast majority of the market and are played by wide audiences, their implications on game cultures and culture in general need to be studied. Games do not exist in a vacuum, and studies into free-to-play games intertwining with culture and politics such as those by Nieborg (2015) and Möring and Leino (2016) are especially important. At the moment, studies are also overwhelmingly concentrated on the western free-to-play world. Understanding the differences between free-to-play gaming cultures and taking these into account when studying free-to-play phenomena are crucial, as also noted by Page (2012).

While the free-to-play model has been criticized for its negative influences, only a few documents examined it from this viewpoint. In these cases, the focus fell on addiction and problematic behavior. The ethics of free-to-play game design were rarely brought up despite them being a major discourse in public discourse surrounding the games. As free-to-play games are popular and widespread, their impact on society can be considerable and grants closer inspection, both of its beneficial and detrimental aspects.

CONCLUSIONS AND LIMITATIONS

This article has presented a systematic review on free-to-play game research. The review shows that the amount of research on the free-to-play model has increased, yet it is unbalanced in favor of quantitative studies examining how to predict or improve profitability. The review shows a lack of qualitative approaches and critical views on the model and its meanings for culture and society. Through analysis of the documents, four future research agendas were formulated: 1) Industry studies to understand the practice of free-to-play development, 2) Qualitative studies to understand player experiences, 3) Close readings to understand free-to-play game characteristics, and 4) Studies to understand the meanings of free-to-play games in our culture, society, and politics.

The review does not include all of the free-to-play research conducted so far. The search left out some of the key research, such as Lewis et al. (2012), Alha et al. (2014), and Kimppa et al. (2016). This weakness is at least partly due to Scopus, which while being wide in its inclusion of publications, emphasizes the natural sciences and engineering (Mongeon and Paul-Hus, 2016). In the future, this review can be expanded to provide an even more comprehensive and balanced view. This can be achieved in three steps: 1) Including more databases to resolve the Scopus bias, such as Web of Science, and databases especially important for game research,

such as DiGRA Digital Library. 2) Going backward by reviewing the citations from the resulted documents. 3) Going forward to identify documents citing the selected documents.

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