



**LAUREA**  
AMMATTIKORKEAKOULU  
*Yhdessä enemmän*

# How the Different Retention - and Monetization Features Affect the User Experience in Free-to-play Mobile Games

Sorvari, Tommi

2018 Laurea



**LAUREA**

AMMATTIKORKEAKOULU

Laurea-ammattikorkeakoulu

*Yhdessä enemmän*

How the different retention and monetization features  
affect the user experience in free-to-play mobile games

Tommi Sorvari  
Liiketalous  
Opinnäytetyö  
Helmikuu, 2018



Tommi Sorvari

**Kuinka eri retentio -ja monetisaatio ominaisuudet mobiilipohjaisissa ilmaispeleissä vaikuttavat käyttäjäkokemukseen**

Vuosi

2018

Sivumäärä

66

---

Käyttäjäkokemus on laaja konsepti, jolla ei ole yhtä ja ainoaa määritelmää. Se kuitenkin sisältää monia eri ulottuvuuksia, joiden avulla voidaan hahmottaa selkeämpi kokonaiskuva pelaajan kokemuksesta. Koska käyttäjäkokemusta voidaan pitää subjektiivisena, sitä voi olla vaikea tutkia yksittäisen pelaajan tasolla. Ulottuvuuksia voidaan pitää suuntaviivoina ja niitä voidaan hyödyntää suunniteltaessa käyttäjäystävällisiä ilmaispelejä mobiililaitteille.

Työn päätarkoitus on tutkia, kuinka retentio ja monetisaatio ominaisuudet mobiilipohjaisissa ilmaispeleissä vaikuttavat käyttäjäkokemukseen. Lisäksi tavoitteena on ymmärtää mainittujen käsitteiden lisäksi myös asiakashankinnan tarkoitus, jotta voidaan hahmottaa, kuinka ilmaispeilit toimivat käytännössä. Tietotaidon avulla eri retentio -ja monetisaatio ominaisuuksia voidaan rakentaa pelin ympärille.

Työn lähestymistapa sisältää päätavoitteen tutkimisen eri tutkimusten ja lähteiden pohjalta. Tämän lisäksi työ sisältää subjektiivisen case-tyyppisen tutkielman, joka pohjautuu tekijän omiin kokemuksiin kohteena olevasta pelistä. On huomioitavaa, että tulokset pohjautuvat tekijän omiin kokemuksiin eivätkä välttämättä kuvasta muiden pelaajien näkemystä.

Koko työn tulokset näyttivät, että retentio ominaisuuksilla oli vaikutusta pääosin pelaajan motivaatioon, tuntemuksiin ja oppimiseen. Käytettävyys, joka voidaan määrittää osaksi käyttäjäkokemusta, mahdollistaa pelin helpon käytön ja tukee oppimista mikäli pelin mekaniikat, pelattavuus, ja käyttöliitymä on suunniteltu huolella. Monetisaatio ominaisuudet voivat vaikuttaa negatiivisesti pelaajan käsitykseen pelistä, jos niitä ei ole suunniteltu varovasti. Tämä pätee niin pelin sisäisiin ostoksiin, kuin peliin sisältyviin mainoksiin. Työ on suunnattu suomalaiselle indie-peliyritykselle ja sen tarkoitus on tuoda esiin näkemyksiä, joita voidaan hyödyntää tulevaisuuden pelikehityksessä. Opinnäytteen tekijä toimii hiljaisena yhtiömiehenä mainitussa yrityksessä.

Asiasanat: Käyttäjäkokeemus, ilmaispeli, retentio, monetisaatio

Tommi Sorvari

**How the different retention -and monetization features affect the user experience in free-to-play mobile games**

Year	2018	Pages	66
------	------	-------	----

---

User experience is a broad concept with no clear or straight definition. However, it includes many aspects which can be examined to perceive better picture about player's overall experience. Since the user experience can be considered highly subjective, it may be hard to research it at individual level. Aspects mentioned in this thesis are seen as guidelines and they can be utilized when designing user friendly free-to-play mobile games.

Main objective in this thesis is to understand how the user experience is affected by different retention and monetization features in free-to-play mobile games. The goal is also to understand how the acquisition, retention and monetization works in these games. With knowledge of those subjects, different retention -, and monetization features can be built around the game and better picture can be perceived how free-to-play mobile games work in practice.

This thesis offers an approach where general overview of the main goal is examined through another studies and sources. In addition, a case study is made due to subjectivity of user experience. Case study focuses on author's perceptions and responses, received from the game. It's noticeable that results are based on individual's point of view and they may not represent other players opinions.

Overall results showed that retention features were mainly linked to player's motivation, different feelings and learning. Usability, a part of user experience, provides ease of use and supports learning, if game mechanics, gameplay and user interface is designed properly. Monetization features may inflict negative perceptions, if they're not designed carefully. This applies to in-app purchases and advertisements. This thesis is targeted to Finnish indie-game company and its purpose is to bring out visions that can be utilized in further game development. Author operates as a silent partner in this specific company.

Keywords: User experience, free-to-play game, retention, monetization

## Sisällys

1	Introduction .....	10
1.1	Key concepts .....	10
2	Free-to-play (F2P) games .....	11
2.1	Game Structure .....	11
2.1.1	Dimensions of game structure .....	11
2.2	Freemium business model .....	13
3	Key Metrics .....	14
3.1	User Acquisition .....	15
3.1.1	Paid media as part of acquisition .....	16
3.2	User Retention .....	18
3.2.1	Average retention rates .....	19
3.2.2	Role of the engaged player .....	20
3.3	User Monetization .....	22
3.3.1	Direct monetization .....	22
3.3.2	Indirect monetization .....	23
4	Defining the user experience (UX) .....	24
4.1	Aspects of user experience .....	26
4.2	Product related UX, Usability & Functionality .....	28
4.2.1	Usability; Gameplay, Game mechanics, User Interface .....	28
4.2.2	Functionality .....	31
5	Retention features .....	32
5.1	Game progression .....	34
5.2	Achievements .....	36
5.3	Rewarding .....	37
5.4	Social play .....	38
5.5	Reflections to UX .....	40
6	Monetization features .....	42
6.1	In-app purchases .....	43
6.1.1	Pricing models & In-game offers .....	43
6.2	Advertisements .....	45
6.2.1	Video ads .....	46
6.2.2	Pop-up ads .....	47
6.3	Reflections to UX .....	48
7	A subjective case study: <i>Hay Day</i> by <i>Supercell</i> .....	50
7.1	Core Loop .....	50
7.2	Dual currency system .....	51
7.3	Game progression .....	51



7.4	Retention features .....	53
7.5	Monetization features .....	55
7.6	Pros & Cons.....	57
8	Overall Conclusions .....	58
	Lähteet .....	61
	Kuviot.. .....	65
	Taulukot .....	66

## 1 Introduction

Mobile game industry has been growing rapidly since the first smartphones came to the markets. Due to practical playability and compability to smart devices, mobile games has risen their popularity among all people. Supported by the large operating systems such as iOS from Apple and Android from Google, there is an easy accessability to download any applications that developers have been created. The two systems can be found in most of the smartphones in the mobile phone markets, so it can be said that both, Apple and Google, have created a huge supply channel even for the smaller game studios. Developers can gain huge amount of value from worldwide channels, although the competition is fierce due to crowded markets.

As in any businesses, new customers are more likely to be wanted and maintained. When it comes to mobile game industry, competition of customers is harsh. Although the acquisition process can be difficult and games with a high-quality content can't make it to the top lists, it is also vital to concentrate to existing customers. Retention metrics can be used to measure how many percentage of the customers are staying with the game in a certain timeframe. With an internal app analytics, retention is one of the most important metrics to developers.

This thesis will concentrate on different retention - and monetization features, and how they affect to user experience in free-to-play games. User acquisition is mentioned briefly to understand the free-to-play mobile game funnel. Retention features are mainly focused aspects like achievements, social play and rewarding. Those features are built around game progression to keep players more retained. Monetization deals with in-app purchases, different pricing methods and in-game advertising to create revenue. Relations between monetization and user experience is examined those features work in free-to-play games.

### 1.1 Key concepts

Key concepts include user experience, retention, monetization and free-to-play game. User experience can be seen as a broad concept including user's psychological perceptions and responses from the game. It also includes the some of the game's aspects such as functionality and usability. Retention is a metric that tends to reflect to player's enjoyment. It measures how often and frequently player returns to the game. Monetization on the other hand, describes how the revenue is created. Since free-to-play games are free to download, monetization is usually used by a form of in-app purchases or in-game advertising.

## 2 Free-to-play (F2P) games

According to Daniel Nations from Lifewire (2017), free-to-play (F2P) games can be defined as a free games with an option to make additional in-app purchases to buy different features. Games can also be supported by advertisements which can be disabled by making an in-app purchase. The idea of the F2P-games is that the game can reach significantly more downloads than a paid game. Business model of F2P games is broke down further in this thesis and the general player process is demonstrated through different funnels. To perceive a clearer picture about games in general, some structural dimensions are shortly introduced in the next chapters.

### 2.1 Game Structure

According to Gunze, Liebel and Mersch (2010, 150), game structure is based on logic of the game decisions and the decisions are based on rules, strategies and settings of the game. Decisions can also be based on secondary factors, which are character, scene and the plot. Purkiss & Khaliq (2015) mentions that gameplay is made possible by acts of a player. Rules defines the game which causes an outcome.

Game structure is not the same in all games. Different games may have different structure, because they don't share all the same aspects or dimensions, but they might have some similar elements. According to Fullerton (2008) game structure involves dimensions such as player, objectives, procedures, rules, resources, conflict and outcome. These dimensions can be utilized when thinking the core of a game.

#### 2.1.1 Dimensions of game structure

Player can be determined as the user of a game. Phurik & Khaliq (2015, 3) points out that without a player, a game is not a game, since there is no interaction and the player is unable to influence to the outcome of the game. As mentioned before, player activity can be increased by making game more engagementing. For instance, adding requirements to the game "binds" the player, in which case there cannot be progress if the player doesn't accomplish given requirements.

To become a player, user must accept the rules of a game (Fullerton 2008, 28). Rules are defined as what player can or can't do in the game. Rules are a big part of the process of a game, since the player must operate by the rules. For example, rules may define how and how fast the player levels up and and what kind of core gameplay the game has. When thinking the gameplay, it can be possible that the player can't buy certain type of upgrades if

there is not enough of resources to do it. Player may get more resources as the level goes up and the progress is made. Fullerton (2008) also mentions that objects are able to be a part of the rules. For instance, a player may be required to interact with an object, or the player can't use a certain type of object in present level.

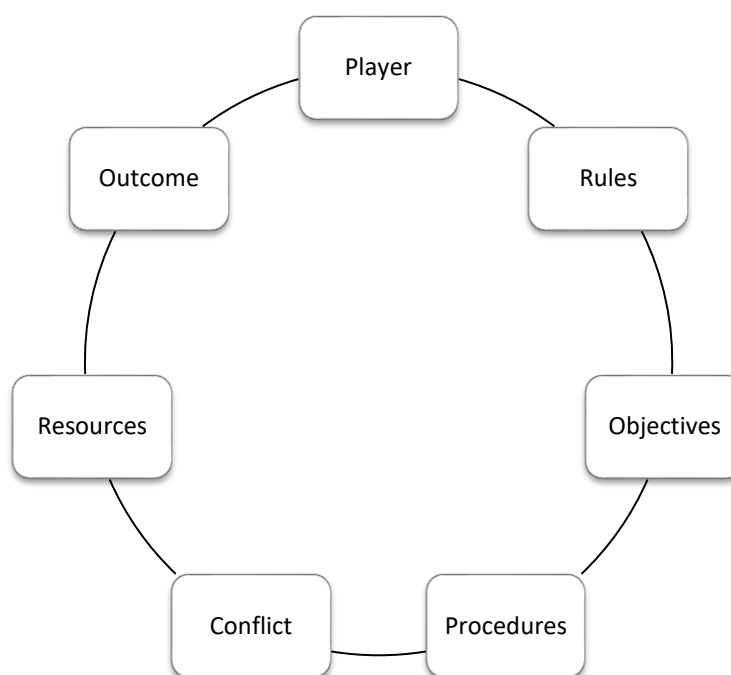
According to Fullerton (2008, 29) objectives can be considered as a key element of a game. Without the objectives, game is lacking goals in which case the game may lose some of its structure. Fullerton points out that, a need to move on towards the objectives, is the measure of involvement in the game. David Mullich writes in his blog (Gamasutra 2016), that without the goals, the game has no sense of accomplishment. Goals give the opportunity to pursue something, but without them the game has nothing to achieve. Goals or objectives can be divided in different types of goals. A game can have an ultimate goal that can be considered as the main goal of the game. With the main goal, a game may have smaller goals which helps the player towards the bigger goal. In his blog, Mullich (Gamasutra 2016) talks about Pokemon Go which has the main goal to catch all the Pokemon in the game. Smaller goals are defined as a "catch the closest pokemon near you" or "catch all Pokemon of a given type". These goals can be seen as objectives that helps the player achieve the main goal.

Fullerton (2008, 29) defines procedures as the actions or methods of a play, which are allowed by rules. Procedures guides player behavior and creates interactions which are important to players experience. Procedures can be determined, what player can do to achieve the given objectives. Games may usually have several ways to proceed in a game and still achieve the main goal.

According to Fullerton (2008, 31), conflict is an aspect of a game where player cannot proceed directly to given objective. As in her example of game called Quake, if the player could just leave a level, an objective would have been accomplished. However, the player must find the way out facing opponents. Conflicts usually challenge the player and creates tension when the problems are being solved. Fullerton (2008, 34) mentions that too high level of challenge can cause frustration, but on the other hand, if the challenge is too flat players might think that they have mastered the game.

Resources appear in many games as a prominent part of them. Resources can be found and managed. They can appear in different forms, whether the resources are energy, ammunition, time or units, but they share the same feature; resources are made valuable due to their utility and rarity. In games, resources can be utilized to make new products, or they can be sold in various markets (Fullerton 2008, 30).

Outcome of the game can differ depending the type of a game. Games have different objectives that players are trying to accomplish. Basically, an outcome can define a winner or loser of the game. Unpredictable outcome is one of the key motivator for the players, because players don't want to know the ending of the game beforehand (Fullerton 2008, 32).



Kuva 1 Examples for structural dimensions

## 2.2 Freemium business model

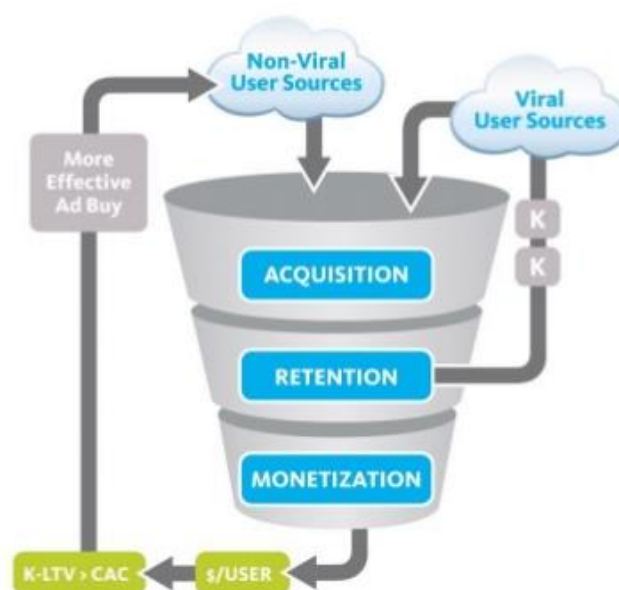
DeRosa & Burgess (2014, 17) notes that there are two criteria's that applies freemium business model. First one is an ability to create a free product that can reach huge audience. Second criteria for companies is to create complimentary products, which are then sold off the free product. Complimentary products tend to be in-game items, which can be utilized in the game. The freemium business model relies on small percentage of users that will spend money to in-app purchases. Majority of players will play the game without paying, but non-paying users can still be monetized with advertisements. Will Luton (2013, 16) also points out that success behind the free-to-play games is the ability to make money by giving your game away for free. Huge audiences can be reached and those who prefer the game are ready to pay for it. It can be said that F2P games are a much like pilot products where the core product is free, but it is possible to pay for an additional content. Wilson & Leaver (2016, chp. 5, 2) also notes that commercial success of the business model is that players can play the game without paying.

Wilson & Leaver (2016, 1, 5) points out that "whales" can be defined as players, who spend significant amount of money to proceed in a game or gain a status. However, "whales" are only a fraction of all players who are playing the game. Matt Kamen from Wired (2016) claims that the whole market is relying on addicted and hardcore players that are spending huge amount of money to F2P games. Kamen emphasizes Swerve's report which was created by monitoring 40 F2P games and observing over 20 million players spending behavior. According to Swerve's February (Swerve, 2016) report, only 0,19 percent of players are creating 48 percent of F2P game's revenue. More than that, top 10 percent spenders create 60 percent of all revenue. According to report's key findings, the 1,9 percent of players made an in-app purchase in month. Report also claims that the typical player makes 1.8 purchases which average per purchase is 13.82 dollars. Stated numbers represents the value of "whales" to F2P-developers, since a small number of players generates a major share of game's revenue.

When thinking the downsides of the model, Adam Clare (2015) points out in his blog that F2P-business model can be problematic, since developers must make thousands or millions of downloads. He states that the business model relies on getting as many players as possible and then hope that someone is ready to pay for the game. Model can be challenging, since app stores are getting more crowded. While acquiring new players, creating quality content with engaging experiences is also vital to developers. Loyal and retained userbase will more likely to pay what the game is offering. It is more likely to have a player to make an in-app purchase the longer the player stays in the game. (BlueLabelLabs 2012).

### 3 Key Metrics

As mentioned at previous chapter, freemium business model leans on customer volume. Game can be given away for free to reach large userbase and then monetize with in-app purchases or advertisements. Model can be considered effective for its ability to attract new players, since there is no "price barrier" and the player can delete the game at any time. On the other hand, F2P games need a significant number of downloads due to small percentage of in-app buyers. As picture 5 shows, key metrics (e.g acquisition, retention and monetization) can be seen as a part of the ARM-funnel. It's important to understand their role part of the freemium model and how they are linked to each other.

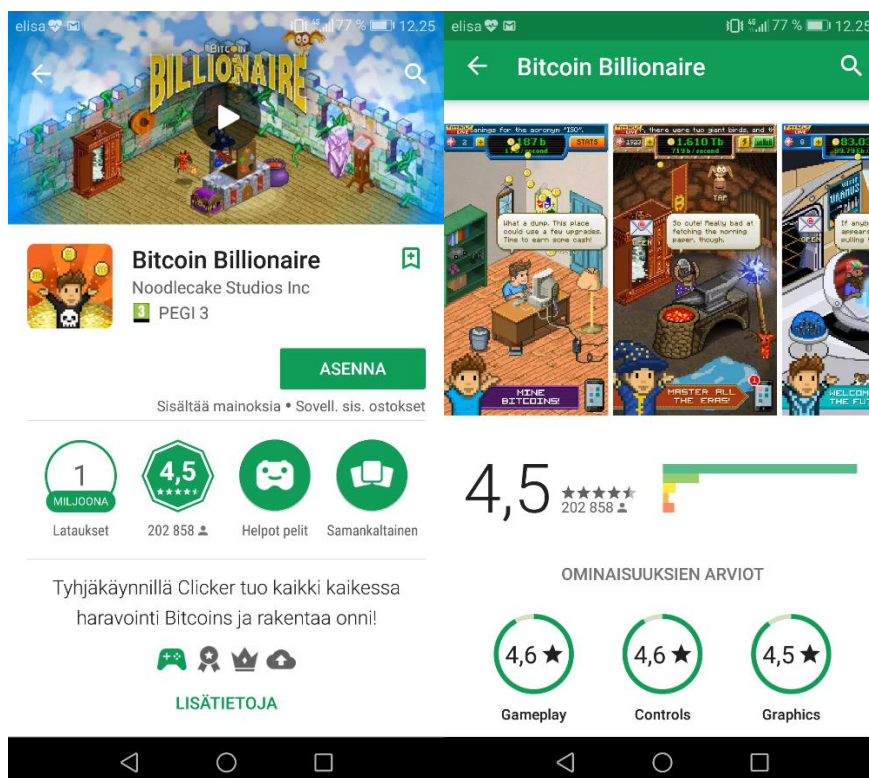


Kuva 2 ARM-funnel (Slideshare 2015, 3)

### 3.1 User Acquisition

Purpose of user acquisition in F2P games is to get as many downloads as possible to achieve a large userbase, which is a base to a freemium business model. As it can be seen, acquisition is the first part of the ARM-funnel (Picture 5). Acquisition deals with how developers can reach the users (Vilho, Moreira, Ramalho 2014, 867). Reaching users is a challenge since there are huge volume of apps and games in the app stores. According to Daniel Rowles (Rowles 2017, 110), app developers need to gain visibility to achieve success. Gaining more downloads tends to achieve more visibility in app stores which helps to get even more downloads. Rowles (2017, 110) defines above as a "victorious circle" once the process can be achieved. However, it is hard to get going in first place.

App stores tend to have different algorithms, in which the game's visibility is based on. While the algorithms may be complex, Rowles (Rowles 2017, 110) mentions that core factors decide whether the game can make it to the top charts. Core factors can be classified as *number of downloads*, *recency of downloads*, *number of reviews* and *average star rating of reviews*. Rowles (2017, 110) summarizes that an app or a game must have lots of downloads with positive reviews in certain period to make a success. Having a great app or a marketing plan will help developers to achieve the "victorious circle".



Kuva 3 Landing page of Bitcoin Billionaire by Noodlecake Studios inc. print screen (Google Play 2017)

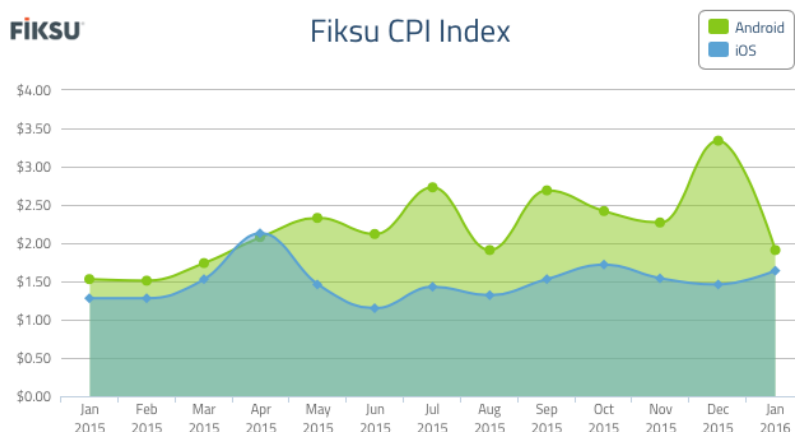
### 3.1.1 Paid media as part of acquisition

Paid media can be defined as channels of marketing that companies are paying for (Brandwatch 2016). According to ARM-funnel (Picture 5), paid media can also be defined as a non-viral user sources, where customers are acquired by investing money to gain more visibility and downloads. When it comes to mobile apps, Pasqua & Elkin (2013, 162) notes that paid media drives downloads at launch, since downloads primarily defines the app's rank at app store. Ranks represent visibility and there can be multiple categories in where a game or an app is able to be involved. Pasqua & Elkin (2013, 162) also mentions that the more downloads the game has in certain category, the higher the rank is. Same applies for the keywords in which case are essential to find your game in the app store. When it comes to a paid media, it can create a high volume of downloads at the app's launch. A high volume leads to elevation of app's rank, which brings more natural visibility for the app (Pasque & Elkin 2013, 162).

According to Hamilton, Bodle & Korin (2016, chp.2, 3), there is a commonly used method, used by industry professionals, where the player's lifetime value (LTV) is higher than cost per acquisition (CPA). LTV demonstrates the average revenue of a player from the entire lifetime. Different acquisition formulas can be used in mobile games. For instance, CPI describes a cost per install which means that the developer will place advertisements across the media to gain

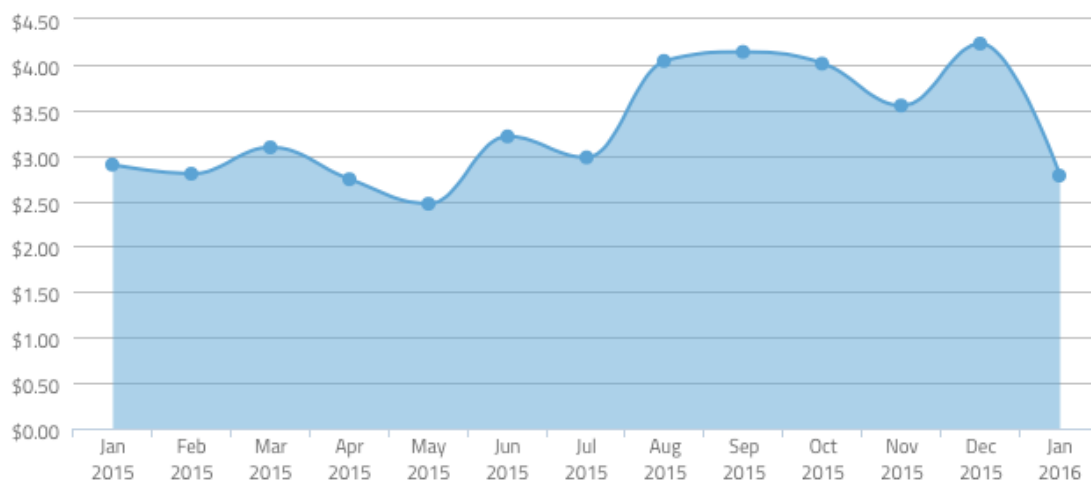


downloads to advertised app. After the game is installed, the payment is made to advertisement network (BusinessofApps 2017). According to Phunware (2014), one of the most effective way is to advertise your app inside another app that have similar target audience. For example, it makes sense to promote an incremental game in another similar game. This can be considered as a good way to reach right customers for the game. In below picture (Picture 4), average rates of CPI are provided by Fiksu to perceive some price range what comes to customer acquisition.



Kuva 4 Fiksu CPI index 2015-2016 (Mobyaffiliates, 2016)

Loyal users are vital to developers, not just new users that may uninstall the game after couple of hours of play. Loyal users can be defined as a player who opens the app three times (Hamilton, Bodle, Korin 2015 chp. 2, 4). If a player has opened an app for at least three times, it can be said that some interest is born. Loyal users are generally more expensive to acquire which can be seen in picture 5 below.



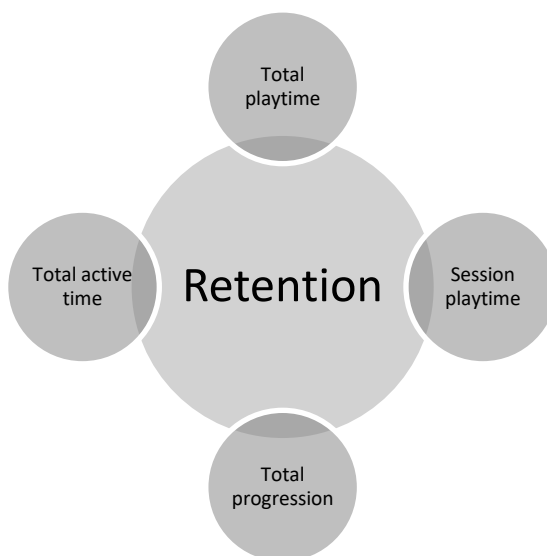
Kuva 5 Cost per loyal user iOS app (US) (Mobyaffiliates, 2016)

After all, it can be said that paid media is a helpful tool to build awareness of your game. When reaching a high volume of downloads, natural visibility of app increases which brings more non-paid users to the game. When a player's LTV exceeds acquisition costs, paid media is profitable, and it should be used in daily based user acquisition.

### 3.2 User Retention

In gaming industry, user retention can be defined as a player activity before the user's churn (Viljanen, Airola, Heikkonen, Pahikkala 2017, 3). The better the retention is, the more longer players are engaged, and a use of a product is longer. According to Filho, Moreira & Ramalho (2014, 867), retention is a metric that concerns how to keep players around after the acquisition. It deals with features that make the game sticky and addictive. Churn on the other hand, describes the moment where the player drops out from the game, either momentarily or permanently. Churn can be also considered as a counterpart of retention. Retention metrics are popular, because they are perceived to reflect the player's enjoyment. In addition, increased product use brings better possibilities for monetization when thinking F2P-games (Viljanen, Airola, Heikkonen, Pahikkala 2017, 1).

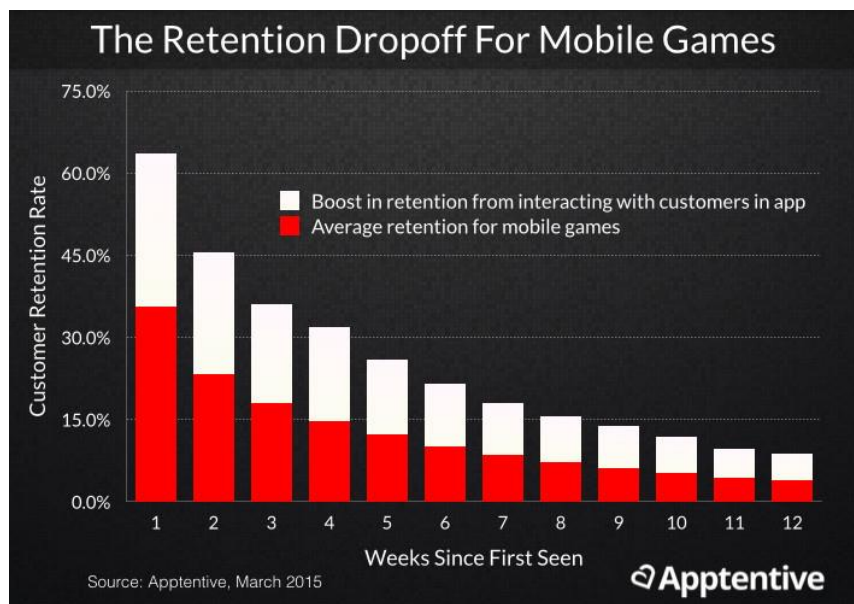
Viljanen, Airola, Heikkonen & Pahikkala (2017, 3) points out different variables for retention. Variables are divided followingly; total playtime, session playtime, total progression and total active or subscription time. Total playtime can be considered as the total time spent on a game while session playtime describes the length of a continuous play. Total progression is a variable where the developers intuitive thinking of game consumption is converted to something that adds positive value, for instance, level completion (Viljanen, Airola, Heikkonen, Pahikkala 2017, 3). When thinking the levels of a game, player's progression can be tracked and measured clearly. For example, progression can be measured in how many levels the player has completed or in what time the player has completed a single level. For last, Viljanen, Airola, Heikkonen & Pahikkala (2017, 3) defines the active time as the calendar time where the player has been active. This suits for the games with open-ended goals and long-term gameplay. If the game has subscription, active time would be the number of months of subscription.



Kuva 6 Retention variables

### 3.2.1 Average retention rates

Retention rates can be described by a retention curve which shows the days passed from an install, but it also shows the percentage of users who are active in selected day. Adam Carpenter (Medium 2017) defines the retention equation as a "number of users active on a given retention day divided by the number of installs in your cohort".



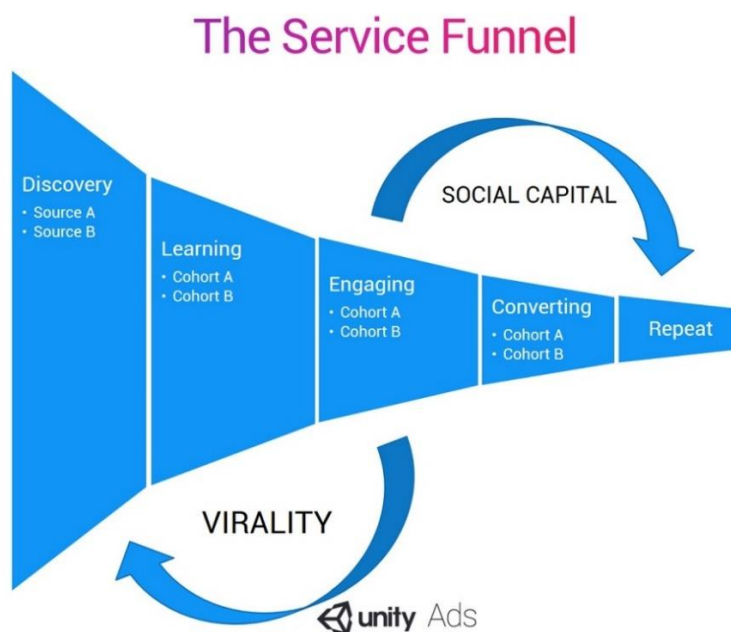
Kuva 7 Mobile games retention rate (Apptentive 2015)

In picture 9 (Apptentive 2015), average retention rates for mobile games has been described on weekly basis. Cohort day can be defined as a first day in week one. When analyzing this

figure, it can be discovered that most of the game's userbase is extinct during the week one. After two weeks an average mobile game has lost approximately 80 percent of its users from the cohort day. In addition, after a month the average retention rate is below 15 percent and a year after the average game has almost lost the whole userbase. Understanding the big picture of the amount of retained players is vital. User retention tends to describe the player's enjoyment and a better retention brings better possibilities to monetization. (Viljanen, Airola, Heikkonen, Pahikkala 2017, 1). This makes sense when looking the figure. When players are more engaged in a longer term, the higher the possibility is to increase the rate of small number of buyers. More than that, when looking the ARM-funnel (Picture 5), retention also brings more players to the game via new viral sources. To conclude, increased retention allows better monetization, but also non-paid, viral acquisition.

### 3.2.2 Role of the engaged player

Oscar Clark (Unity3D 2016) points out in his blog that understanding the players lifecycle and what they do in certain stages helps developers to motivate players more effectively. Motivation may lead to engagement in which case players are more retained and their lifecycle increases. To understand the lifecycle stages better, Clark (Unity 3D 2016) breaks down them to parts; Discovery, Learning and Engagement. Stages are outlined in *the service funnel* as it can be seen in picture 8. Service channel helps to think the role of the engaged player all the way from downloading the game to repeat an in-app purchase. The service funnel has some similarities while looking the ARM-funnel (Picture 5), but it also breaks down the points between the key metrics and it can be utilized when keeping the users retained.



Kuva 8 Service Funnel (Unity 3D 2016)

Discovery stage is where players are becoming aware of the game. The goal is to convert players to download the game but also play the game. Discovery stage can also be considered as a part of acquisition where it's important to know which source gives users and brings value for retention and monetization (Unity 3D 2016). When thinking sources, it can be part of the paid media, for instance acquired users by using CPI-marketing. Targeting the advertisement campaigns for right audience brings more likely more commitment players to the game. In addition, after the players are engaged, more discoveries can be achieved by virality, also known as a word-of-mouth marketing (Picture 10).

Learning stage can be defined as a first user experience to player and it ends when playing a game becomes a routine. Routine is important to gain truly engaged players and help them to become fans of the game. The core question of the stage is to ask do the players understand how to play the game and how the game fits in players lifestyle. Learning stage is an early stage when looking retention. According to Clark (Unity 3D, 2016), if the players don't return to a game in day two, the game isn't interested enough to players pay for the content. It is also important to measure the duration and frequency of the session and discover how they change in future gameplay. (Unity 3D, 2016)

At the Engaging stage, players have become fans of the game. It can be considered as a stage to ask are the players ready to pay for the game. Clark (Unity 3D 2016) defines that if the player has returned after seven days of playing a game it can be considered as engaged player. In addition, when the player reaches day 15 retention, the player is truly committed

to a game. As noted earlier by Viljanen, Airola, Heikkonen & Pahikkala (2017, 1), the increased use of a product brings better options for monetization. This correlates well for the service funnel where the converting is the next step.

### 3.3 User Monetization

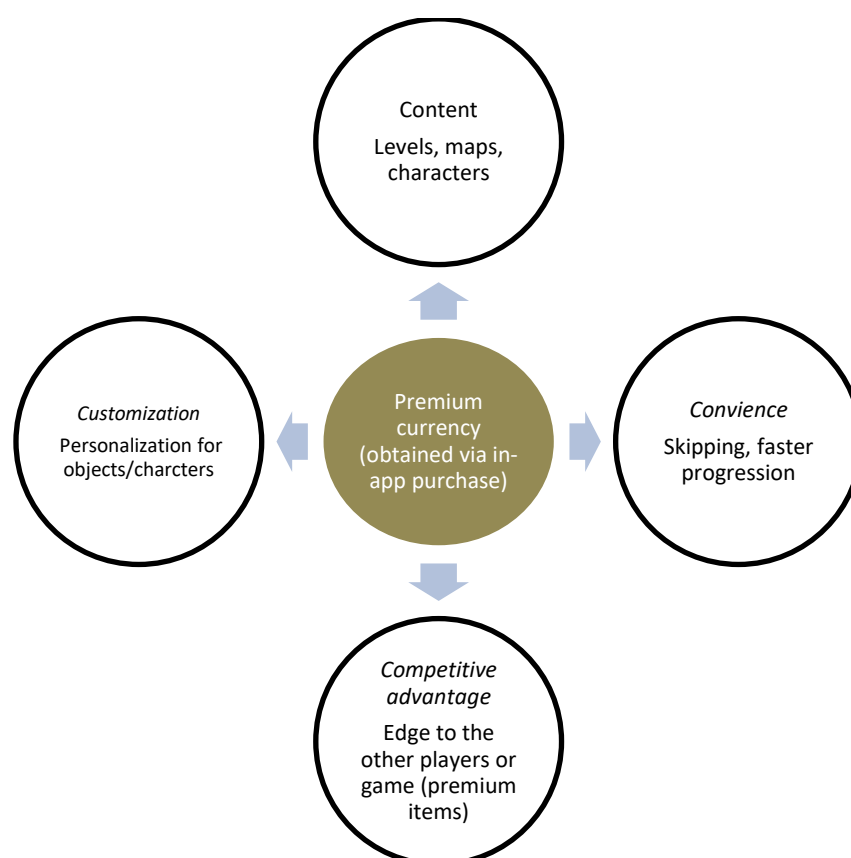
Monetization is the last phase of ARM-funnel (Picture 5), where the revenue is created. After the players are engaged they are more likely to spend money in the game. As per Clark (Unity 3D, 2016), purpose of the monetization is to gain repeat payers, not just single time buyers which is the goal of the service funnel (Picture 10). In addition, spending money to the game should feel great for the player. According to Filho, Moreira & Ramalho (2014, 867), there is two types of monetization; direct monetization and indirect monetization, which are both broke down in following sections.

#### 3.3.1 Direct monetization

Direct monetization can be defined as a revenue stream which comes from direct sales through the game's in-app purchases (Filho, Moreira, Ramalho 2014, 867). In-app purchases may often include virtual goods that can be bought by real money. According to Wilson & Leaver (2016, chp.5, 2) income is also sought offering additional content to players. Players can buy contents to enhance or extend their basic experience what the game is offering. Wilson & Leaver (2016, chp. 5, 2) also refers to Will Luton's terms of four C's, which can be defined the monetization aspects of a F2P-games. Following aspects include *content*, *convenience*, *competitive advantage* and *customization*.

*Content* consist more maps, levels, characters or something similar that gives more experience from the game world or adds new abilities in it. *Convenience* can be defined as an any purchase that skips player ahead. Skipping provides player to access something that can be acquired later in a game with time and dedication. *Competitive advantage* is something that gives player an edge to the other players or the game itself. For instance, when thinking Fullerton's (2008, 30) explanation about the resources as a part of a game structure, the edge can be achieved by buying them, since resources are made valuable due to their rarity and utility. Progression of the game may be faster the more resources the player has and the more they can be utilized. Last aspect of the monetization is *customization*. It can be considered as a process of creative expression, where player can fashion or personalize something in the game. (Wilson & Leaver 2016, chp.5, 2)

According to Minchev & Schmitt (2016, 5), F2P games typically has an own in-game currency which can be bought by real money. Currencies can be divided in two; soft currency and hard currency or in other words, premium currency. Soft currency can be earned in a game by playing, while premium currency is obtainable through spending money. However, a small amount of premium currency can also be obtained in a game. Minchev & Schmitt (2016, 5) points out that premium currency is supposed to upgrade a game experience and it can be exchanged to soft currency. According to Hahl (2014, 42), premium currency can be used to purchase premium items that can't be obtained otherwise. When analyzing the Luton's terms of four C's (Wilson & Leaver 2016, chp.5, 2), premium currency can be adjusted to a game as a part of these monetization aspects (Picture 11). Premium currency can be bought by real money and then used as per four C model.



Kuva 9 Premium currency as a part of Luton's terms of 4C's

### 3.3.2 Indirect monetization

Filho, Moreira, Ramalho (2014, 867) defines indirect monetization as advertising. An advertisement is set into a game which leads to a advertiser's website. Number of players tends to have an influence what comes to number of advertisement impressions and clicks. The higher

number of players and user base's size in a game, the higher is the number of ad impressions (Filho, Moreira, Ramalho 2014, 867). Salmond (2017, 249) also notes that advertising is a considerable monetizing model where advertisers pay to the developers in return to have their ads shown. Advertisers are more likely to pay developers if developers can prove the base of existing players.

As mentioned earlier in acquisition section, an advertiser will place advertisement across the media to gain downloads. The most efficient way to game developer is to advertise the game in a similar game that has a same target audience (Phunware 2014). In CPI-marketing for instance, a payment is made to the advertisement agency after the advertiser's app is installed (BusinessofApps 2017). To conclude this, advertiser's ads are shown in another game via the advertisement agency. The agency and the developer get paid, when the advertisers app is installed.

According to Goncharova (2017, 18) in-app advertising has different formats such as interstitials, banners, native ads, video ads and offerwalls. Advertisements are a considerable method to monetize in F2P-games, but they can be irritate users when used often and when they are overcrowding. Conharova (2017, 18) breaks down the ad types as followingly. *Banners* are narrow stripes of graphical ad image that are placed in a top or the bottom of the screen. *Interstitials* can be defined as a static or video ads that fills the whole screen and can be programmed to appear in selected time. *Offerwall* provides ad offers, also called tasks to the player which they can accept. Ad offers can be video ads or side app installations. By completing these tasks player may get rewarded by in game currency. Lastly, Conharova (2017, 18) mentions *rewarded video ads* which has the upside compared to interstitials. A player can decide whether watch the ad. Watching can be considered as voluntary and the player is rewarded for the impression.

#### 4 Defining the user experience (UX)

User experience (UX) can be seen as the subjective relation between the user and video game including ergonomics of controller, usability of user interface, but also personal relationships (Bernhaupt, 2008 47). Although, user experience is subjective and can be seen as a broad context which lacks a clear definition, ISO (chp.3.23, 2010) has a definition what comes to UX. According to ISO-standard, user experience (UX) can be defined as followingly.

"person's perceptions and responses resulting from the use and/or anticipated use of a product, system or service." (ISO chp. 3.23, 2010)



"User experience includes all the users' emotions, beliefs, preferences, perceptions, physical and psychological responses, behaviors and accomplishments that occur before, during and after use." (ISO, chp. 3.23, 2010)

In Bernhaupt's book (2008, 25), Takatalo, Häkkinen, Kaistinen & Nyman notes that there is no general definition for UX. They refer to ISO (chp. 3.23, 2010) definition which includes perceptions and responses from the use of a product and consider these as psychological in nature. In a psychological evaluation process, perceptions which are interesting and enough meaningful are processed in human's consciousness. Some perceptions are evaluated subconsciously, others in awareness, which consist cognition, emotion and motivation. Together with attention, emotion, cognition and motivation forms a set of psychological compartments which makes the "persons perceptions and responses" relevant and valid in any context. (Bernhaupt 2008, 25)

Sebastian Long (Gamasutra 2017) notes in his blog that user experience is a particular discipline of game design, which is centered around the player's psychology, thinking processes and behavior. Understanding UX is a part of game development which purpose is to ensure that the designed experience is truly reflected to players mind. This applies knowledge of understanding the players behaviors and thinking processes, which can be done by data collection and testing with real players. Long (Gamasutra 2017) quotes shortly that " UX is where the science of the player meets the art of game design".

According to Celia Hodent (2016) UX includes user's perceptions and interactions with a product. Interaction educes satisfaction and emotions to the user. Hodent (2016) refers to Norman's book called *The Design of Everyday Things (1988)*, where the system, or in this case a video game is designed and implemented. Design is based on developer's mind of what the game should include and how it should function. After that, the players make their own opinion about how the game works through the interactions with players prior knowledge and expectations. This correlates well with Long's definition (Gamasutra 2017) above where UX is a part of game development where developer's design is truly reflected to a player's mind.

Based on above definitions, UX can be seen as a game designer's mindset about the game, which is then communicated to the players through the video game. Players then receive different perceptions and responses from the game interaction such as emotions, psychological responses, behaviors and beliefs during, or after the use.

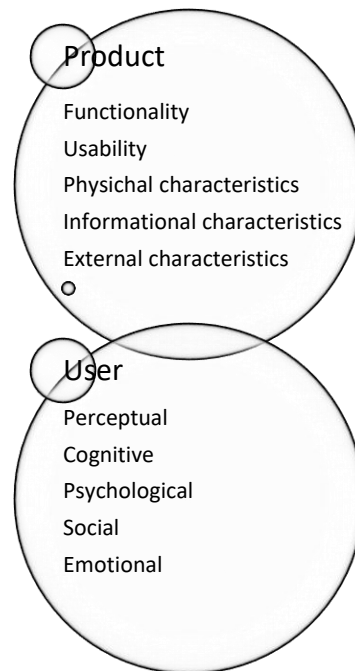
#### 4.1 Aspects of user experience

Vissers & Geerts (2014, 2) refers to Provost's and Robert's ten dimensions of user experience, which can be used to characterize both negative and positive aspects of UX. Aspects are divided in half; first five of them are concerning the product itself and the rest are related to product's user. Product based aspects are listed as *functional*, *usability*, *physical characteristics*, *informational characteristics* and *external characteristics*. User based aspects are defined as followingly; *Perceptual*, *Cognitive*, *Psychological*, *Social* and *Physical*.

Vissers & Geerts (2014, 3) also points out more dimensions for UX such as Fuchsbergers Values in action model (ViA), which includes main categories like *functional value (efficiency)*, *social value (social image)*, *emotional value (engagement)*, *interpersonal value (connectedness)* and *epistemic value (learning)* and *conditional value (situational context)*. Both models have some similarities which can be useful when perceiving the context of UX.

Bernhaupt (2016, 3), breaks down more dimensions for user experience, which are addressed by researchers when thinking human-computer interaction (HCI) and games. Dimensions are categorized in *aesthetic* -, *emotion* -, *stimulation* -, *identification*, and the *other dimension*.

*Aesthetic* dimension shows how aesthetically pleasing or beautifully something is perceived (Bernhaupt 2016, 3). For instance, a player may find pleasure from the game's visual graphics. *Emotion* can be considered as a key factor of UX and it includes feelings and emotions as a part of contributing product experience. *Stimulation* dimension describes the human need for innovative and interesting functions, interactions and contents. Innovativeness excites the user through its novelty and in games, novelty can be considered as a one of the qualities of user experience. *Identification* dimension is about how much the product allows to user identify with it. Bernhaupt (2016, 3) notes that human need to express him- or herself through objects is a way how the identification dimension works. More than that, using or owning a specific product will help user to reach a wanted self-presentation. Identification is about self-expressing through the product to communicate identity. Based on above, identification can be seen in games as owning something that tells about your status in a game for instance. Lastly, the *other* dimension focuses on multiple things like value and meaning, social connectedness, dependability, security and trust, service quality, and flow.



Kuva 10 Different aspects of UX, referred to Vissers & Geerts, 2014

According to Takatalo, Häkkinen, Kaistinen & Nyman (Bernhaupt 2008, 26) psychological compartments such as emotions, cognitions, motivation and attention haven't changed significantly over the time. Example for this is today's gamers who describe their experiences. Gamers report about their emotional feelings (enjoyment), cognitive evaluations (game challenge) and motivation (curiosity). Takatalo, Häkkinen, Kaistinen & Nyman (Bernhaupt 2008, 26) notes that aspects of multidimensional UX can be easier to understand when combining the external game components and internal psychological compartments. Game components can be seen as a game system and play. Game system can be affected by game designer and play is described the interaction that player makes in the game. UX is dependent of psychology and the user background. Psychology and how it's represented in UX is depending on content which is the game. (Bernhaupt 2008, 26)



Kuva 11 Multidimensional UX by Takatalo, Häkkinen, Kaistinen, Nyman (Bernhaupt 2008, 26)

## 4.2 Product related UX, Usability & Functionality

Functionality and usability are a part of product related user experience in video games. In this chapter, the purpose is to focus more on these two aspects to understand more of how proper user experience is generated through the aspects of core product. The game is played through the gameplay and can be considered the most important component of game usability (Rajanen & Nissinen 2015, 3). Functional gameplay is about interaction and it's allowed by game mechanics and user interface.

### 4.2.1 Usability; Gameplay, Game mechanics, User Interface

Game usability has a rather broad definition what comes to video game context. Rajanen & Nissinen (2015, 3) have concluded several researcher's definitions about game usability together. Usability can be divided into three components which are game interface, game mechanics and gameplay. Gameplay can be considered the most important from all three components, but they all are needed to make game functional and satisfying. Game usability has

more aspects like playability, game story, user interface and the methods how the game interacts with the player. In addition, game usability is about the player's ability to learn, control and understand the game. (Rajanen & Rissanen, 2015)

When thinking the gameplay as a main component of usability, it is useful to know what the gameplay means. According to Hahl (2014, 18) there is no single definition for gameplay. However, gameplay consist many elements such as controls, user interface and user experience. Hahl (2014, 18) notes that gameplay can be explained as a "portion of the game in which the player is assisted in any way to achieve desired actions."

According to Fabricatore (2007, 4) gameplay can be defined as a "synergy emerging from the interaction of certain elements included in the game". He also points out player-centric definition to gameplay. Gamers defines the gameplay as a what they can do in a game and how the game responses for their actions. Gamers are also interested about in-game environment actions, regardless of their own decisions (Fabricatore 2007, 5). According to Adams (2013, 9) gameplay consist following aspects;" *the challenges that a player must face to arrive at the object of a game*" and *"the actions that player is permitted to take to address those challenges"*. Adams (2013, 8) describes a challenge as an any task given for a player and the challenge must require mental or physical effort. Player can take actions, allowed by rules, to overcome these challenges. These definitions correlate well with Fullerton's (2008) structural dimensions (Chapter 2.2.1) where the game structure dimensions are *player, rules, objectives, procedures, conflict, resources and outcome*.

Game mechanics includes goals of the game, the rewards of the action and the choices provided to players (Bernhaupt 2008, 24). According to Takatalo, Häkkinen, Kaistinen & Nyman (Bernhaupt 2008, 24) meaningful goals direct players actions. Players pursue the goals within the game's rules and choices and then earn rewards, make decisions and face challenging situations. Gamers tend to constantly evaluate their game performance either consciously or unconsciously. For instance, players might think are they reaching the goals and are they capable of to meet the challenges. After reaching the desired goals, players feel positive emotions and sense of competence (Bernhaupt 2008, 24).

Fabricatore (2007, 5) notes that "interactivity and "activity" are the two main concepts what comes to definition of a gameplay. To receive any interactivity at all, players interact with concrete or abstract objects. Players tend to focus on different elements that they deal with in virtual world to make "things to happen". These can be perceived as mechanics. Fabricatore (2007, 5) defines game mechanics as a "black boxes" that can receive inputs and they react by causing outputs. Outputs lead to single change of an "black box" and/or lead to new

interactions with other "black boxes" causing a chain reaction. This can also be seen as action what happens when player is given a choice based on game's rules. What happens in a game when player interacts *object X*? What outcomes does it have in game progression? Based on definitions, game mechanics can be seen as how the game, and the objects in the game works based on game's rules. Inputs can be seen as player actions and outputs as outcomes, which are generated through the player interactivity.

Hahl (2014, 19) describes the user interface (UI) as the screens and controls to players. Feedback is part of the UI, since the player is informed about his/her actions through the graphics, sounds and physical interactions. Hahl (2014,19) points out an example where player is taking damage from a source. Purpose of UI is to inform player what is going on together with sound effects.

*User interface (UI) design* can be defined as design of user interfaces for software such as the look of the mobile game or an app. Purpose if the UI is to provide pleasurebility and ease of use for the user. Due to software's intangibility, the only way to interact with it is through the designed UI. Many UI's are designed to focus on usability and effinency and the users should be able to achieve given goals efficiently without focusing too much on the interface. (The Interaction Design Foundation, viitattu 2017)

According to Pihlajamäki (2016, 5), UI design consist player interaction with the game together with feedback and information received from the game. When it comes to mobile games, UI design can be divided into different guidelines and heuristics. For instance, design guidelines represent concrete things such as option to pause the game, enter a full screen mode and a having an option to adjust the volume. User experience guidelines include fast loading time of the game, quick access to pause and save and a sleep mode. (Pihlajamäki 2016, 5)

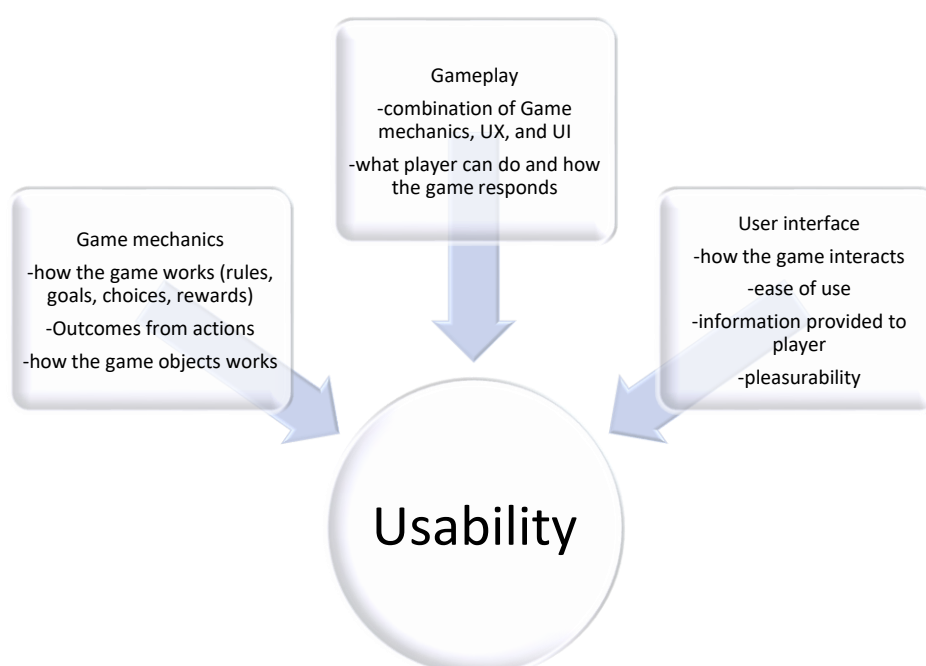
To perceive a detailed picture about UI design, Pihlajamäki (2016, 6) refers to playability heuristics, introduced by Korhonen and Koivisto. Heuristics are divided in three; Game usability, Mobility and Gameplay. In her thesis, Pihlajamäki (2016, 6) introduces the Game usability part of the heuristics, which can be seen below.

- ” □ Audio-visual representation supports the game
- Screen layout is efficient and visually pleasing
- Device UI and game UI are used for their own purposes
- Indicators are visible
- The player understands the terminology
- Navigation is consistent, logical and minimalistic

- Control keys are consistent and follow standard conventions
  - Game controls are convenient and flexible
  - The game gives feedback on the player's actions
  - The player cannot make irreversible errors
  - The player does not have to memorize things unnecessarily
  - The game contains help (Korhonen and Koivisto, 2006)"
- (Pihlajamäki 2016, 6)

As it can be seen, heuristics refers strongly to the ease of use. For instance, player understands how the game works, when the game is providing help or feedback. When it comes to mobile game context, simplified controls are important due to touchscreen of the smartphones. Convenience can be achieved by making the controls around tapping the screen.

Usability can be seen as a broad definition, but it can be divided into several sections, which can help to understand the subject in whole. To conclude the subject, all the usability components are gathered in picture 13.



Kuva 12 Game Usability

#### 4.2.2 Functionality

According to Fullerton (2014, 307) functionality or functional game can be defined where the game system is settled properly for any player who doesn't know anything about the game

and can still play and progress in the game. It also means that player can interact the game unaided by developer. Functionality is about interaction, where different components such as controls interact properly. When thinking a functional game, user interface can be seen as functional aspect which is also a part of usability. As noted, UI provides ease of use and feedback and therefore player can play the game without past experiences.

## 5 Retention features

Retention is a key metric for game developers to keep players in a game, but also acquiring new players through the active users. Increasing the retention will require actions from the developers to make the game engaging. These actions can be seen as methods that can be used to boost player retention. The purpose is to reflect the methods into UX aspects and see how they correlate together.

Filho, Moreira & Ramalho (2014, 868) introduces Peter Askelöf's list of both, retention and monetization features. Following retention methods are quoted in below;

*R01 - Skill trees; Very common system in RPG (Role Playing Games)*

*R02 - Content unlock; The player can unlock contents after game action.*

*R03 - Cumulative reward retention; The player receives an increased reward every day that he comes back to the game*

*R04 - Non-cumulative reward retention; The player always receives the same rewards for coming back to the game regularly*

*R05 - Gambling reward retention; The player receives a random prize by visiting the game on regular time intervals*

*R06 - Punishing absence; Consists of punishing players who don't return to the game with a certain regularity*

*R07 - Single play; This mode is more common on premium games.*

*R08 - Co-operative play; Cooperative games are more common on PC, but there are some games that use this mode on mobile like Clash of Clans or Rage of Bahamut*

*R09 - Competitive play; Usually games with a leaderboard to compete with friends*

*R10 - Versus play; Like cooperative, it's more common on Console or PC games, but there are games that implement good versus modes like Puzzles and Dragons or Song Pop.*

*R11 - Achievements; Bonus features which are unlocked when players complete certain tasks*

*R12 - Leaderboards; main factor of competitive games, but simply having leaderboard doesn't turn a game into a competitive*

*R13 - Levels; According to Askelöf: "Levels are an indication of how far a player has progressed in the game. In games such as Ms. PacMan, advancement to the next level was clearly*



*visualized in the game by changing the color of the ghosts and the layout of the maze, etc.”.*

R14 - Random elements; *Gives player a sense of surprise”*

(Filho, Ramalho, Moreira 2014, 868)

As it can be seen, above mentioned features aren't tied into a certain game genre and they can be seen as some general guidelines. According to the list, aspects like rewarding, game progression, achievements and social play can be recognized. As a part of social play, Filho, Ramalho & Moreira (2014, 868) also notes features like "request a friend's help" and "invite a friend". Purpose of these two is to create a social interaction, which keeps players in a game, but also create a viral acquisition source while players can invite their friends in a game.

According to Debeauvais (2016, 8) there is a lot of common in player retention and enjoyment. Enjoyment on the other hand can be seen as a combination of different subcategories including motivation. Player motivation includes challenge, social interactions and immersion. Debeauvais (2016, 9) notes that players are also motivated through the competition, cooperation, curiosity, control and fantasy. When it comes to immersion, it consists of effectance which is related to player's ability and wanting to interact the game world and have an impact in it. Immersion also includes escapism, which is related to player's imagination and feeling to be in somewhere else than a real world (Debeauvais 2016, 10).

Debeauvais (2016) introduces a case-based approach where the different techniques are used to understand the relation of retention and challenge in different types of games. Approach of his thesis is that challenge is a key factor to determine the player's retention. For instance, these techniques include game tutorials, progression, and money as a part of grinding (e.g. progressing the game without making in-game purchases). Categories such as *challenge and retention, time, segments, social interactions* and *money* are also used to divide different techniques and perceive how they are affected to player's retention or churn. Although some of these methods are concentrated on other than mobile games, they can be applicable to F2P mobile games. These categories are broken down in below;

*Challenge and retention*; Challenge is the main motivation to play games. Suitable amount of challenge is crucial, since if the challenge is too little or too hard for player's taste, they will churn. (Debeauvais 2016, 138)

*Time*; Concept that is heavily related to challenge. When players progress in the game, challenge decreases. Can be maintained by pacing the game mechanics. (Debeauvais 2016, 141)

*Segments*; Different player types with variable style of play. Players act differently; some of them play intensively a short period of time and churn, some will play long periods of time and have tolerance to game difficulty. (Debeauvais 2016, 143)

*Social interactions*; Influence on retention depends on context and the style of interactions. (Debeauvais 2016, 145)

*Money*; Subject that correlates with challenge and retention. Money allows players to avoid grinding and save time, but also allows players to gain advantage and reduce the game difficulty. (Debeauvais 2016, 146)

To pick a few retention methods, next subchapters will concentrate on game progression, rewarding, achievements and social play. With a solid game progression, the game offers easy learning curve, objectives and something to pursue on. It is notable, that game progression can be considered as a retention method when the other aspects such as achievements and rewards are built around it. Therefore, it is important to demonstrate how the progression works in F2P-games. As a part of progression, rewarding is to provide in game currency to keep players motivated and offer them a reason to keep playing. Lastly, social play concentrates on building communities and positive experiences among the players. It's about different forms of multiplayer that can be implemented into the game.

## 5.1 Game progression

Core loops define the gameplay and progression is made when certain number of loops are completed. Vankka (2014, 26) notes that retention mechanics, including scores, leaderboards, missions, achievements and levels, are built around the game progression. Their purpose is to keep player interested and the core loop sustainable.

As mentioned earlier by couple of sources, Luton (2013, 32) also notes that games are based on sets of rules which defines player actions and also game's reactions (e.g UI). Rule sets can be repeatable in which case they are called as core loops. Purpose of the loops is to provide players compelling activity for every second when player is active. In addition, loops should be able to offer exit point in a session, a reason of a return, and self-modification to create long time goals. Core loop can be also seen the reason why people are playing the game (Luton 2013, 33). In F2P games, repeatable loops are an option which can form a gameplay. In addition, players repeat these loops to progress in a game and are able to unlock more things.

Luton (2013, 35) describes the *wait* loop as the most archetype loop in F2P games. It includes *Action*, *Wait*, *Reward* and *Upgrade*. Example used by Luton (2013b, 35) is from game called Farmville. Player plants a crop, then waits growing of the crop to collect the rewards from harvesting. After that, player may upgrade something allowed by game rules. This is a core loop of the game and the player progresses when completing enough of these loops. Silvestro (LinkedIn, 2016) notes that core loop is a heart of the game and can be defined as time when the player is active. The core loop should be engaging in which case the retention can be

built around it. The players should feel sense of progression toward an goal which keeps them coming back. According to Silvestro (LinkedIn 2016), goals can be for instance game's levels, achievements, leaderboards and the scoring mechanics.

Hahl (2014, 25) introduces couple of ways to progress in a game. *Spatial progress* provides a new level when the player has completed the earlier one. It may also include access to new areas or resources when the game doesn't have level-based progression. *Passive character progress* is about new game mechanics that player can learn through the progression. It doesn't include player made decisions, but it consists the linear upgrades that player may achieve regardless of how the game is played. *Active character progress* on the other hand is based on spatial progress, but it also offers a choice when new mechanics are introduced. According to Hahl (2014, 26) choices can be perk points, resource management, rewards, unlocks, upgrades, routes and dialogue options.

Appointment mechanics such as rewarding the players when returned in the game can be implemented. They are supposed to support monetization and some of the mechanics are tied to players' speed of progression. If there are limited actions that player can perform, one mechanic is to provide resources to player since running out of resources requires player to wait for more before continuing. Another one is grinding where the player has to play long time to get certain item in the game. Both of these mechanics slows down players' progression and can be bypassed by purchasing in-game items that speed up the progress (Vankka 2014, 26).

Money can be seen mostly as a part of monetization where the revenue is created. However, when it comes to game progression, money may have similarities to retention as well. As per Debeauvais (2016, 146), money is a feature that is tied to retention and allows players to save time from grinding. In his example of World of Warcraft (WoW), players may skip the grind and move on straightly to the fun part of the game. Debeauvis (2016, 147) also points out that too aggressive monetization can harm retention. Players may buy their spots on WoW guild which can raise questions about fairness and therefore causing churn in some players. Paywalls can also be a part of progression.

According to Vankka (2014, 26), paywalls aren't seen unethical by professionals unless its told to player in advance that full access of the game requires payment. Paywalls can also be created by implementing so called *hard gates* or *soft gates* to the game. Hard gates prevent progression completely and requires payment to continue. Soft gates on the other hand blocks the progression for a certain time and player is able to continue earlier if he/she makes a purchase. However, a general view is that the players should get the complete playing experience for free (Vankka 2014, 27).

## 5.2 Achievements

In games, achievements can vary in different forms. For instance, Blair (2011) describes several types of achievements such as tasks, measurement achievements, completion achievements, and incremental -and meta-achievements.

In many games, achievements are earned by completing tasks. Blair (2011, 7) divides tasks to boring tasks and interesting tasks. Both of these tasks should be approached differently what comes to reward structure. If the task is boring, the game should offer desirable value that is extrinsic to the task itself. Also, adding rules, fantasy or game elements can make the task more enjoyable. When the task is interesting, achievements should be attentional. They should concentrate on players attention on lessons or strategies for the task. (Blair 2011, 7)

Measurement achievements rewards are quality dependent, and they give feedback to player. Achievements are seen as standards which are related to players performance. These standards can be measured against the players own performance, or they can be a value determined by game designer. Beating a player's own high score or the community's high score are examples of measurement achievements. Star ratings, such as 1-3 stars in Angry Bird, are game designer's determined value and player can repeat the same task to get better score. Feedback is vital since it allows player to reflect their performance to their own performance goals that they have set for themselves. (Blair 2011, 10)

Completion achievements are different than measurement achievements since they don't give feedback about player's performance. Instead of that, player is rewarded when the task is completed. These types of achievements are binary because they are either completed or not. In addition, completion achievements can also be divided to performance - or non-performance contingent achievements. Performance based achievements requires skill to complete while non-performance achievements can be as simple as completing an event without any requirements. (Blair 2011, 11)

Incremental achievements are repeatable tasks in the game. The player can accomplish the same task over again with increasing difficulty. For instance, the number of collectables needed may increase after the first time of completion. Task is same, but the activity to achieve it again is longer. Meta achievements on the other hand are achievements that are gained through the completion of several different tasks. (Blair 2011, 20)

### 5.3 Rewarding

Rewarding is an important retention mechanic that can be built around the game progression. Player can gain value in the game by receiving rewards for exchange of the time spent. Value can also be related to player's feelings. Hahl (2014, 27) breaks down the rewarding into two sections; *in-game rewards* and *out of game rewards*. In-game rewards consist aspects like score, currency, experience and achievements and they appear in all games in case of keeping the player motivated. Rewards make the player feel more powerful and successful and they also help building a connection between the player and the game (Hahl 2014, 28). Out of game rewards can be considered highly subjective because of different player types. Hahl (2014, 27) points out the feeling of success as a part of rewards. For instance, player may feel accomplished something when a certain objective is completed, and player gets rewarded.

Wang & Sun (2011, 3) introduces the different forms of rewards. Following reward systems represent ways how the rewards may appear in games and are summarized below.

*Score systems*; Can be seen as numbers to mark players performance and that way represents players status in the game. Scores can be considered as tools of comparison and self-assessment and it's a feature that is crucial to make the game fun.

*Experience point reward system*; Suitable for games which have an avatar. Avatars can earn experience and level up and rewards are given in form of new skill. Experience represents a facility type of reward, since it enhances the avatars ability.

*Item granting reward system*; Rewards of virtual goods given to a player that can be used. Commonly used in role-playing game (RPG) genre where players are known to consume time and money to get rare in-game equipments.

*Resources*; Valuables that are collectable, used in a game and affects the gameplay. Resources are often practical and differ from items that have social and comparison value.

*Achievement system*; Players collect achievement titles to fulfill stated conditions. Achievements encourage players to complete specific tasks or play in challenging ways. Purpose of achievements is to give players sense of accomplishment and rewards.

*Feedback messages*; Provides feedback for successful actions and purpose of them is to create positive feelings. Can be considered as instant rewards and feedback mechanics can appear in different forms such as pictures and sound effects. Value of feedback messages is the evoked sense of praise that can affect human emotions and behavior.

*Plot animations and pictures*; Visual rewards that are gained after an important event such as level competition and or end game. Represents sense of fun via the visual attraction and milestone completion.

*Unlocking mechanics*; Gives player to access to new game content such as levels or mini-games after completion of certain requirement. Unlocking mechanics are tied to player curiosity in case of what is included in future play. Purpose of this is to make players feel that there is always something new to look forward in the game.

(Wang & Sun 2011, 3-5)

As it can be seen, rewards can be implemented to a game in many ways. Reward can be an outcome from the basic grind loop or from the greater goal or achievement. For instance, player may gain score, experience or currency from the core gameplay. F2P games usually has its own in-game currency or resources tied in game progression. As mentioned earlier, soft currency can be earned via gameplay while premium currency can be bought and gained by small amounts (Minchev & Schmitt 2016, 5). After the player completes the grind loop, he or she gets rewarded, usually with soft currency. After completing the certain amount of grind loops, player may level up and gain bigger rewards like premium currency. As the level of the player goes up different unlocking mechanics are important since they make players anticipating something new. For instance, introducing new content or achievements can be considered as an unlocking mechanics. Achievements can be seen as major goals what the players can achieve and then gain greater rewards.

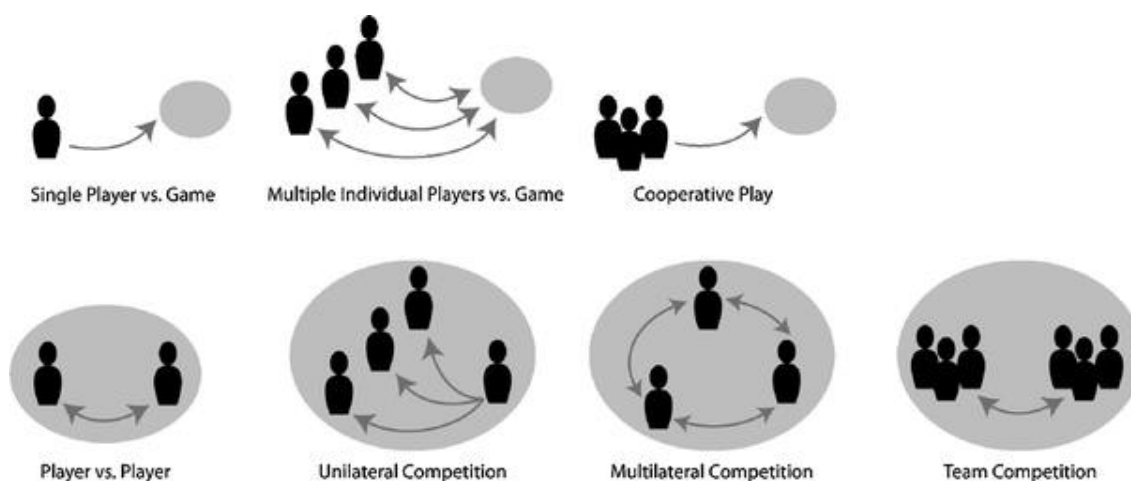
Daily rewards can be considered as a form of rewarding that may increase player retention and make the game more enjoyable to return. Grosso (Gamasutra 2016) notes that daily rewarding or a repeated log-in bonus can be a compelling reason when maintaining the active players. As per Filho, Ramalho & Moreira (2014, 868) rewards can be cumulative, non-cumulative or random. Cumulative rewards may appeal players more than non-cumulative rewards since the value of single reward increases by the time that player returns constantly to the game. On the other hand, random daily reward gives player a sense of surprise which can increase the players anticipation for daily login reward. Free rewards may be virtual goods that are needed in the game. According to Grosso (Gamasutra 2016), players tend to have positive feelings from the log-in rewards which can be reflected to the whole game. Result of daily rewarding is that players play more often and frequently.

#### 5.4 Social play

As mentioned before, social play can be part of retaining the players, but it can be also part of acquisition via virality. Social play can have different aspects such as co-operative or competitive play and social aspects can be used to create social interaction.

In their research paper, Bekker, Sturm & Eggen (2010, chp. 4.5) defines different player patterns which are used to describe the players social interaction. Patterns are also related to

other things such as number of players, whether the game is competitive or co-operative and whether the players are competing or the game. Patterns by Bekker, Sturm & Eggen (2010, chp. 4.5) can be found below (Picture 14).



Kuva 13: Player patterns (Bekker, Sturm & Eggen, 2010)

According to Ibister (Bernhaupt 2008, 13), presence of other players has an impact what comes to learning and mastering a game. Players tend to model game play behavior from those who have learned the game mechanics or challenges. In that case, more experienced players may offer coaching to those who haven't reached that point yet. Playing with others can also affect player's gameplay by raising positive effect or lowering the frustration. Ibister (Bernhaupt, 2008) also notes that sessions of social play creates evolution of relationships among players. Due to that, play activities are contextualized in larger framework of strengthening ties, building trust, forging alliances and flirting among the community of players.

Although social play is defined by Ibister (Bernhaupt 2008, 12) as "active engagement with a game by more than one person at once", theoretical framework of social play may also apply in different types of multiplayer. For instance, community-based games where there isn't necessary real-time multiplayer where the players are playing the game same time, players can learn from each other about the game via chatting and that way building relationships between other players. In-game communities can be formed by letting the players to create their own guilds or clans. When analyzing Picture 15 about different player patterns and guild activity, there could be several ways to establish social play. For example, co-operative play versus the game requires the players to work together to complete the given objective and achieve something in the game. Guild activity may also consist team competition, where the two or more guilds are competing each other. This could be done directly in real-time multiplayer or via task completion, where the different tasks are given to each team. For instance,

the guild which can accomplish more in-game tasks, will advance in leaderboards more quickly.

## 5.5 Reflections to UX

Great usability in general is crucial and it can be also seen as feature that can boost player retention itself. As mentioned earlier, usability consists aspects like gameplay, game mechanics and user interface. Usability provides ease of use to the player; the game is functional, and the player can play the game without spending too much time to learn controls or menus. In addition, it makes the game more enjoyable when the game can be played effortlessly. UI gives crucial feedback to the players from completed actions and offers help if needed. Greatly designed usability provides a solid base when designing more retention mechanics into the game.

**Game progression** is in the central point when building retention mechanics around it. A game consists a core loop, in other words a base of the gameplay, which is then expanded by implementing these mechanics. Each of the progression styles works differently; Spatial progression offers new levels, areas or resources while passive -, and active character progress is based on introducing new game mechanics when the progress is made. It is noticeable that games usually combine different progression styles in order to add more depth in the game. Hahl (2014, 29) also describes that if the game has only spatial - and passive character progression, the gameplay experience is completely linear. In other words, it may decrease the player's sense of autonomy if the progression is too repeatable and gives no, or very little choices to player.

Character progression styles can be seen as a tool of learning, since the introduced mechanics guides player what he/she can do in the game. If the character progression system has choices (e.g active character progression), it gives player options to play the game as wanted. Hahl's (2014, 29) example of choices is to offer player a set of rewards which player can choose. For instance, these can be upgrades or virtual items that player can use and possibly decide wanted progression style.

Frustration occurs when the game is either too challenging, or the progression system is too slow, and it can be accelerated by using money. Money can be a great way to offer an alternative progression for players, because some players may have less time than others. However, it should be an alternative method and the game should have enough content that can be completed without paying. In addition, if the progression of the game is too grindy (e.g it takes too long time to progress) without making an in-app purchase, it may lead to players to churn. According to Vankka (2014, 27), selling time in some form is frequent and effective



way to monetize players in F2P games. He also refers to Pascal Luban who talks about city-building games and describes the in-game speed ups as "frustrating-alleviating items". Name is based on idea that the games are designed to frustrate players in order to get them pay for the accelerated progression. Frustration is considered as a driver which encourages players to spend money. When doing right, players may not even notice that the game is designed purposely frustrating (Vankka 2014, 28)

**Achievements** have motivational value for players. As mentioned earlier, measurement achievements give feedback to player in which case they can reflect their performance. Well-structured feedback can affect players competence, which will lead to increased intrinsic motivation. When feedback is connected to clearly defined goals, it can also enhance performance and learning retention (Blair 2011, 11). Completion achievements are binary and reward program system or incentives are key part of them. Blair (2011, 12) describes that incentives have a major positive effect to task performance. If the task is performance based and requires a skill, it has a greater impact compared to non-performance contingent achievements. However, incentives may have negative effects on intrinsic motivation if the rewards are given too easily and often. Incremental achievements have a positive upside for player's in case of learning and mastering the game. Since the achievement consist in same task which is accomplished over again with increasing difficulty, player's skill level develops after many sessions of gameplay. Downside for the repetitive actions is that they may lead to player's decreased sense of autonomy. In that case, players are lacking self-direction (Blair 2011, 21).

**Rewards** are given when player progresses in a game. They are also tied with achievements, because some of them are objective and completion based. A well-designed reward system may have a positive impact to player's enjoyment in which case the players are more retained. On the other hand, if the game is too slow to progress and hardly has any rewards, players might get bored and stop playing. As per Hahl (2014, 27) rewards increase the player motivation whether they are score, currency or experience. Players also gain feeling of success when achieving rewards in the game.

According to Takatalo, Häkkinen, Kaistinen & Nyman (Bernhaupt 2008, 27), all rewards don't motivate player equally to continue playing. Reward is evaluated by its relevancy, how challenging it was to achieve, how satisficing or enjoying it was to achieve, and did the achieving involve any special skills and abilities. In general, rewards that are relevant or intrinsic are considered more enjoyable (Bernhaupt 2008, 27). As stated, rewards include feelings of pleasure and success.

Wang & Sun (2011, 7) describes what kind of role rewards has when they are gained. In-game rewards are used to advance in the game, but players also like to review their rewards which reminds them about their own accomplishments. Rewards also have social aspect, which allows players to show rare achievements or in-game items to other players. According to Wang & Sun (2011, 7), reviewing rewards provides players sense of accomplishment and memories, which are linked previous in-game events. Showing off the rare in-game items or achievements will allow players to show their status in the game. This can also be considered as a part of self-expression and pride.

Rewards can also boost the player's feeling of fun before they aren't even given (Wang & Sun 2011, 8). Anticipation is important factor of positive experiences. However, anticipation can turn into anxiety or displeasure if the reward isn't good enough what it was expected to be. For instance, if the given effort for certain task doesn't add up with received rewards, anticipation will most likely to turn into negative feelings and disappointment.

**Social play** can be considered as a feature that may have positive impacts to UX and player retention. Having social features in a game may help to build engaged community between the players. Players can learn the game from each other, build relationships and co-operate, or compete. Observations can be made how the social play is linked to UX. For instance, competitive game feature has a winner of some sort and therefore it may increase player's motivation about the game. Whether its leaderboards or high-score lists, player is able to be better than others which may lead to learning the game even more. Learning from the more experienced players can increase the awareness of how the game and the mechanics work in order to progress faster. In co-operative play where there is a given challenge or task, cognitive thinking occurs between the players. Players may have to think how to overcome the task which can lead to trust and more powerful ties between the players.

## 6 Monetization features

As mentioned in Key metrics chapter (chp. 3.3), monetization can be divided in two; direct in-game sales and indirect ad revenue streams. Direct monetization features in games can vary in many forms consisting hard -and soft currency, different pricing models and in-game offers. Advertisements can occur as a forms of pop-up ads and video ads. The purpose of this chapter is to understand the monetization features more deeply such as the ways that in-app purchases can be sold and how the video advertisements work in practice. Lastly, these features are examined in which ways they are linked to user experience.

## 6.1 In-app purchases

In-app purchases (IAP) can work as a part of dual currency system. As mentioned, player can buy hard currency with real money. According to Debeauvais (2016, 20), there are three different styles of in-game sales. Nature of these items can be functional which includes power-ups and bonuses, social (eq. gifts) or aesthetic, consisting accessories and customization. Small spenders tend to invest in functional upgrades while bigger spenders use their money for customization and gifts. (Debeauvais 2016, 20). Hahl (2014, 44) on the other hand, splits IAPs into three; *one-time purchases*, *consumables* and *premium time*. One-time purchases can be content unlocks or currency, including soft currency multipliers. Consumables acts like in-game boosts, which affects the gameplay. Premium time on the other hand doesn't affect the gameplay but the player is rewarded with an increased currency after completing a round or a core loop.

Luton's terms of 4C's (Picture 7) describes also a lot, when it comes to IAPs in general. Nature of these kind of sales are mostly functional excluding the customization aspect. IAPs can be designed to sell hard currency only which can be used to speed-up the gameplay or expanding the content. However, IAPs can be sold in different ways such as in bundle packs or with different in-game offers. Different sales models in general are described in the next chapter.

### 6.1.1 Pricing models & In-game offers

This chapter includes description about few pricing models in general to understand how IAPs can be sold in different ways. Since the F2P mobile games are digital products with a free core product, all of the traditional pricing models can't possibly be used. However, IAPs may include models like discount pricing, psychological pricing, promotional pricing and bundle pricing.

According to Kotler & Armstrong (2014, 340) discounts are used for rewarding the customers for certain responses. For instance, these can be volume purchases made by customer, or a seasonal promotion. Psychological pricing is about adjusting the price in order to create psychological effects. This can be done by adding a price tier, which is significantly more expensive than others to boost the sales of lower tier purchases. Another way is to use ".99\$-pricing" to create much greater psychological differences compared to "even numbers" (Kotler & Armstrong 2014, 340). Promotional pricing is linked to discounts. These can simply be discounts to boost sales, special-event pricing or limited-time offers, which can create buying urgency. Promotional pricing is described by Kotler & Armstrong (2014, 343) as pricing the

products temporarily below list price to boost short term sales. Finally, there is bundle pricing which is used to combine different products to create a bundle. They are offered for reduced price compared to total amount of money, if the products were bought separately. According to Kotler & Armstrong (2014, 339) price bundling is a way to promote the sales of the products that customers might not buy otherwise. In addition, combined price must be low enough in order to create a situation where customers make the purchase. (Kotler & Armstrong 2014, 339-343)

In F2P games, above mentioned models can be seen as a part of direct in-game monetization. Filho, Moreira & Ramalho (2014b, 4) lists couple of monetization features including in-game offers and currencies. In-game offers consist *unique offers*, *daily offers* and *event offers*. F2P games have become more like services instead of being only products. For instance, different kind of promotional campaigns occurs in certain periods of time, which helps the overall monetization. Discounts can be part of these above-mentioned offers. According to Filho, Moreira & Ramalho (2014b, 4), unique offers can be usually purchased once, and they often have a major discount. Purpose of daily offers is to present a small discount to convert users to paying users. Lastly, event offers are designed for a certain date such as Christmas and Black Friday.

Virtual items can also be sold in bundles. They can be combination of hard currency and in-game resources or combination of different resources that can be utilized. These bundles can usually appear at the start of the game as a "starter pack", or they can be completely random. In picture 12, a bundle has been created by offering hard currency (gems) and soft currency (coins). In addition, player receives an unique bonus item which can be obtained only in offered bundle. It's also notable that the offer has time limit, which can create buying urgency among the players in case of missing the deal.



Kuva 14: Bundle pack; *Trials Frontier* by RedLynx

An interesting option to more innovative mobile game monetization is annuity. Annuity works like an offer where the in-game currency is delivered to player in over periods of time. The actual purchase is a lumpsum, paid when the annuity starts. A blog post from Scientificrevenue (Scientificrevenue, 2017) introduces an example from game called *Nitro Nation* by *Creative Mobile*. A player can buy an instant purchase for 4,99\$, granting him/her 250 in-game currency. Instead of that, a second option is much more valuable what comes to final price. Price of an annuity is 2,99\$ which delivers 30 in-game currency in every day, lasting for one month. It's all about better exchange rate, which grants player a total of 900 in-game currency. It is also notable, that annuity offers have impact on retention as well, since player redeems in-game credits constantly in certain period of time. In a way, player is committed and "tied" into a game for a longer time. (Scientificrevenue 2017)

## 6.2 Advertisements

As mentioned earlier, advertisements are indirect form of monetization where advertisers pay money to developers to get their ad shown. Ads are also a great way to monetize players who don't want to buy in-game items via in-app purchases. Advertisements can be spilt in video ads and pop-up ads, which consist banners and interstitials. Interstitials can also work as video advertisement, but difference to rewarded video ads is that they're not optional and they pop-up randomly. Next chapters will concentrate on both; video ads and pop-up ads.

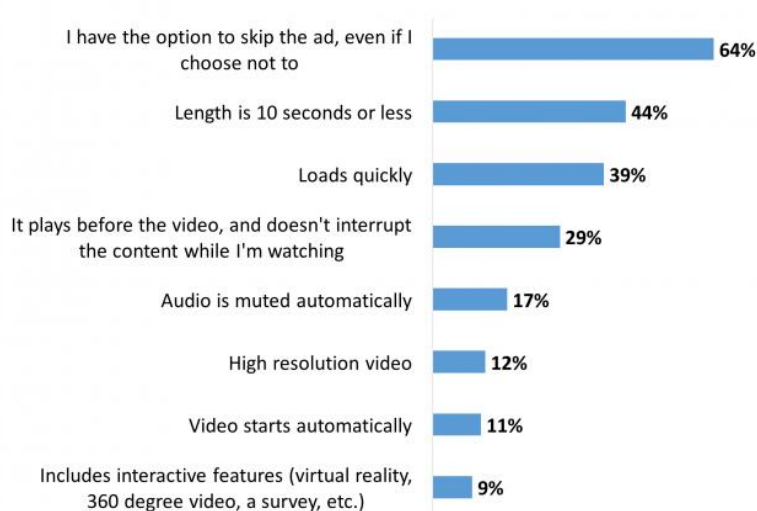
### 6.2.1 Video ads

Video advertisements can appear differently in F2P games. They may appear randomly, or they can be used as optional which allows player to decide whether he/she watches the ad. Upside for the randomly showed ads is that they guarantee an impression. Each watched ad creates revenue for the developers and awareness for advertisers.

Optional video ads are advertisements, which don't appear randomly. *Rewarded video ads* were mentioned earlier by Concharova (2017, 18). Watching an ad is voluntary and player is then rewarded usually with in-game currency. These types of advertisements can also speed up the progression slightly. For instance, if the player wants to skip an activity which can be a waiting process (e.g. wait loop), it can be done by watching an ad. Or if the player lacks in-game resources or soft currency, a certain number of ads can be watched in daily basis.

According to Tran (Business Insider, 2017), rewarded video ads can help developers rely less on IAPs, since it's a way of monetizing the non-paying existing users. They are also considered more tolerable option; players are receiving something (e.g. virtual currency) for their trouble. Lastly, Tran (Business Insider, 2017) notes that rewarded video ads can boost player retention due the given currency which otherwise can be obtained by paying. In picture 13 (Business Insider, 2017) a survey made by BI Intelligence describes the overall top factors for video ad receptiveness among the users. The most favored option is that player has chance to skip the ad if possible. In addition, video ads shouldn't be too long, the should ad load quickly and doesn't interrupt the user while consuming content.

#### Top Factors For Video Ad Receptiveness



Q: What are the most important aspects of a video ad that make you receptive to its message? Choose up to three. n=465  
Source: BI Intelligence

EXCLUSIVE DATA FROM  
BI INTELLIGENCE

Kuva 15: Video ad factors (BusinessInsider, 2017)

### 6.2.2 Pop-up ads

As mentioned in chapter 3.3.2, advertisements have different forms such as banners, offerwalls and interstitials. Pop-up ads can be banners and interstitials, since they "pop-up" during the gameplay. As noted before, Concharova's (2017, 18) definitions for banners and interstitials are as followed;

*Banners* are narrow stripes of graphical ad image that are placed in a top or the bottom of the screen.

*Interstitials* can be defined as a static or video ads that fills the whole screen and can be programmed to appear in selected time.

According to Luton (2013, 98) the advantage of banner ads is their ability to consume biggest screen space with the least possible intrusion to player. The game can be played even if the banner is showing. On the other hand, if the device screen is small, they can be cumbersome and ineffective in case of their visibility. Small visibility may lead to low clickthrough (CTR) rate. Wen (2016, 18) talks about the "Banner Blindness" phenomenon and refers to experiments whether the banners are ignored among the users or not. This was done by looking if the users were fixing their eyes on the banner in website, either consciously or subconsciously. The results were that there were no fixation and users hardly paid any attention to banners.

However, regardless of the "Banner Blindness", exposure of advertising will affect the user's implicit memory, which is unconscious and unintentional form of memory (Wen, 2016, 19). When it comes to brand awareness, longer exposure time and bigger size of the banner ads have a positive impact on user's recognition and memory recall towards the advertised brand. In game environment, banner ads can be more effective compared to them in general. Wen (2016, 19) refers to research made by Yeu, which showed that banners lead to high implicit memory, but also partially high explicit memory, which is the conscious part of the memory and contains intentions from past experiences. These results were gained even though the primary attention of the players were on the game.

Although the banners are small stripes on bottom of the device screen, they can be efficient way to influence the gamers. Longer advertisement time from a single advertiser may lead in better recognition of advertiser's brand. This will also help developers to gain revenue from banners due the clicks and website visits made by players.

Interstitials may work differently whether they are static, or video-based advertisements. Luton (2013, 99) mentions that interstitials may be timed, requiring player to wait for five seconds to continue the session. They also may require a click or tap to continue. Effectiveness of interstitials is high and so is the payout. Downside of this ad type is that they are highly intrusive; interstitials interrupt the gameplay and slows the game progression.

According to research made by Unity Technologies (eMarketer 2016), only five percent of US gamers preferred interstitial video advertisements in F2P games. Static, full screen images were more preferable option which were supported by 29 percent who answered the poll among other 650 gamers. Disadvantage for video interstitials is that they may have a requirement to watch the whole ad although some of them can be skipped in the start of the video. Compared to rewarded video ads, interstitials don't provide any in-game rewards to player. Therefore, player doesn't gain any value from them.

### 6.3 Reflections to UX

**In-app purchases** in F2P games are built on purchasable in-game items or premium currency and they may have different values such as functional -, social - and aesthetic value. Referred to Luton's terms of 4C's, concretion values gained from IAPs can be faster progression, customization, competitive advantage and expanded content.

Vankka (2014, 30) describes that in-app purchases can disturb immersion and break game mechanics if the design isn't careful in general. IAPs have impact on game experience so developers should balance both. Virtual items that have functional value and have impacts on gameplay, are tricky to design. The items that are desirable, should consist a noticeable advantage. However, the advantage shouldn't be that big that it breaks the game's balance and fairness (Vankka 2014, 31).

Especially in competitive games where the game is based on leaderboards or ranks, buying a competitive edge to the other player raises questions about the fairness. Hahl (2014, 33) defines meaning of "pay to win (P2W)" as an option where players can buy an edge over the non-paying players. The advantage can be for instance a shortcut, boost or in-game currency. If the game is competitive, the developers should keep in mind that creating IAPs that are affecting gameplay, may get negative feelings among the users.

Neutral in-game items don't affect the gameplay itself. Vankka (2014, 31) describes that they are easy way to monetize the game and they don't create problems with game balance and fairness. For instance, neutral in-game items fit well in casual games, since they're not competitive. Value can be created to the players by selling additional content, speed-up items for



the game progression and decorational items. As mentioned earlier in game progression section, speed-up items are efficient way to monetize the game by selling time. However, if the game is designed too slow to progress without paying, players get frustrated and will more likely to churn. Balance between the time and money should exist even if the game isn't competitive.

Decorative items have aesthetical and social value for the player and they allow customization of an avatar or an equipment. With decorative items, players are able to express themselves and the items can work as status symbols if there are any restrictions to them. Decorative items are can also be collectables. They have only decorative value and rarity value. (Vankka 2014, 30)

According to Minchev & Schmitt (2016, 4), the design process of F2P games should focus on balancing the monetization to create the best possible experience to the players. When thinking of balancing, the game should be first enjoyable, consisting a solid core loop and retention mechanics. The more engaged the user is, the more likely he/she makes the purchase. Balancing the game also consists the amount of in-game currency that player can get after completing transaction from IAPs. The value shouldn't be too high because then the game content can be consumed too quickly. If the value is too low, player may feel that purchase isn't worth the money. The key is to find a sweet spot, which gives a fair amount of advantage or provides an accelerated progression that isn't too slow or fast. In this case, gained value can also be seen as time versus money comparison. For instance, is it worth to buy a shortcut if it takes  $X$  hours/days of gameplay? These kinds of questions also depend on players individual wants and needs.

Different pricing models are used to create psychological responses among the buyers. For instance, if the in-game offer has time limit, it will create buying urgency or feel of fear to lose a great deal. Offers can also be tweaked by adding another price tier or higher discount percentages. For example, adding significantly higher price tier. It may make the customers think that another prices are more reasonable.

**Advertisements** can feature in a game as video -or pop-up ads. Rewarded video advertisements can be considered the most UX friendly among the other forms of advertising. Player is gaining value (e.g in-game currency) by watching the ad. In addition, watching is voluntary so the player isn't interrupted. Wen (2016, 22) also describes that incentives are needed to encourage people to watch ads. Besides the gained currency, the ads capture player's attention. Due to that they may be more efficient than ads that appear randomly. In general, incentives increase the play motivations and therefore rewarded ads may have positive impact on players' engagement.

According to Warvo (Gamasutra 2016), 54 percent of mobile game players prefer video ads as "paying" for mobile games in exchange of in-game rewards. The report was made by Unity and was based on data collected in surveys of over 2000 players and developers in November 2016. Case study made by AdColony (AdColony 2017) states that 48 percent of players chose to watch rewarded video ads instead of making an in-app purchase (2,6%). According the study, users that watched the ads had increased session time. It is also notable that video ads didn't affect people from making IAPs.

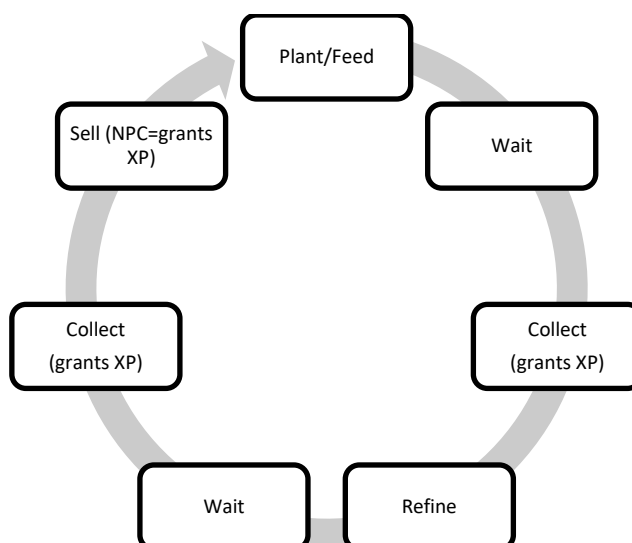
Interstitials provide an impression, but it interrupts the gameplay and therefore has negative effects to immersion. According to Wen (2016, 21) intrusive ads steer the user's attention away from their original goals and therefore players may feel negative feelings such as being distracted and interfered. Instead of intrusiveness, positive user experience can be achieved when avoiding intrusive ads. Wen (2016, 22) also notes that ads shouldn't have negative impact on playability, which is the key factor of UX where player is able to learn, control and understand the game. Shifting a players' attention to ads may have high effectiveness, but it may affect playability negatively.

## 7 A subjective case study: *Hay Day* by *Supercell*

Hay Day is one of the top successful games in category of F2P games. It was launched in 2012 by Supercell and it has grown very popular over the period of time. As a game, Hay day is a farming game where the player farms different kind of food, refines them into products and then sells them to other players or to non-player character (NPC). This case study will concentrate on how the game works in practice, but also what retention -and monetization features the game has. A subjective approach is presented in case of how the features affect the user experience overall.

### 7.1 Core Loop

Core loop of the game is designed around waiting (*wait loop*). A player will plant the crops or seeds of any kind. The crops have waiting time to be collected, before the player can refine them to products. Refining also has a waiting time and with the better the products, there is usually longer waiting time. After the player has a product, it can be sold to earn soft currency (*e.g coins*). In addition, player can also raise animals and collect resources in which case the same loop exists. Unrefined products can also be sold, but usually with lesser money. Core loop of the game is demonstrated in below picture (Picture 14).



Kuva 16: Core loop Hay Day

## 7.2 Dual currency system

Soft currency can be used to buy resources (e.g. crops), different refining facilities, animals or decorations after the player levels up. Further in a game, player can also buy access to different game areas such as fishing spot or mine. Soft currency is obtained by selling products to other players or NPC, but it can also be bought by real money. *Diamonds* work as hard currency and can be obtained through in-app purchases, level ups and achievement rewards. Hard currency can be used to skip waiting time and to buy rare in-game items, which are required to progress faster in a game. With the hard currency, player can also buy different in-game activities, stall space for sold items, or he/she can use it for farm customization.

## 7.3 Game progression

A player can progress in the game by completing core loops. Activities provide experience to the player and certain amount of experience is needed for leveling up. Experience can also be gained by filling truck orders after reaching level four. As mentioned, levels provide new plants, animals, refining facilities and places for player to unlock. When leveling up, the amount of experience needed rises and the progression gets slower in every level. Obviously, better crops and products grants more experience and therefore it's advisable to move generating them.

Hay Day offers decent amount of unlocks in every level which can be considered great for the player. Progression is rapid at first and amount of unlocks engages starting players to progress further. As the progression chart shows, more than half of the possible hard currency up to level 25 are given in first eight levels. Achievements are unlocked at level six, which allows

players to get more hard currency at relatively low levels. It's notable that although the level progression is fast at start, but the amount of coins (soft currency) gained is quite low. Due to that, player gains levels and unlocks, but different facilities may take time to purchase. At the higher levels, player gets more coins from sold products, but level ups are rarer, since the amount of needed experience. In addition, new facilities takes more time to finish. To get a picture from Hay Day's progression, a progression charts are inserted below. First chart shows major -, facility -, animal -, and plant unlocks with experience rates needed. A second chart shows product unlocks, field unlocks, currency and expansion item unlocks.

Level	Experience (XP) needed	Major unlocks	Facility unlocks	Animal + plant unlocks
1	27		Farmhouse, Barn, Silo	Wheat, Chicken + Coop (1st)
2	7	<b>Visitors</b>	Bakery	Corn (4)
3	14		Feed mill (1st)	
4	30	<b>Truck</b>		
5	50			Soybeans (3)
6	220	<b>Achievements</b>	Dairy	Cow + Cow pasture (1st)
7	370	<b>Roadside shop, Daily dirt</b>	Sugar mill	Sugarcane (3)
8	490		Popcorn pot	
9	790	<b>Events</b>	BBQ grill	Carrot (3)
10	960	<b>Neighborhoods</b>		Pig + Pig pen
11	1180			
12	1550		Feed mill (2nd)	Chicken coop (2nd)
13	1790			Indigo (3)
14	2270	<b>Tom (assistant)</b>	Pie oven	
15	2880	<b>Postman, Mastery, Level thresholds</b>		Pumpkin (3), Apple tree, Cow pasture (2nd)
16	3170			Sheep + Sheep pasture (1st)
17	4120	<b>Boat</b>	Loom	
18	4740	<b>Neighborhood trading, Derby</b>		Cotton (3), Pig Pen (2nd)
19	5410		Sewing Machine	Raspberry bush
20	6120			Retriever (1st) + Dog house (1st)
21	7750		Cake oven	Tabby cat (1st) + Cat house (1st)
22	9140			Pincher (1st), Cherry tree
23	10630			Calico cat (1st), Chicken coop (3rd)
24	12200	<b>Mine</b>	Smelters	
25	13700	<b>Farm edit mode</b>		Chili pepper (3)

Kuva 17 Hay Day progression (part 1), Source Hay Day wikia

Product unlocks	Field unlocks	Currency	Expansion items	Level
Egg	Field (6)			1
Bread		Coins (85)		2
	Field (3)	Diamond (1)		3
		Diamond (1), Coins (100)	Land-cleaning supplies	4
	Field (3)	Diamond (1)		5
Cream, Milk				6
Corn bread, Brown sugar	Field (3)	Diamond (1)		7
Popcorn		Diamond (1)	Saw (1)	8
Butter, Pancake	Field (3)			9
Bacon, Cookie		Diamond (1)		10
Bacon & Eggs	Field (3)		TNT barrel (1), Dynamite (1)	11
Cheese		Diamond (1)	Axe (1)	12
White sugar	Field (3)			13
Carrot pie		Diamond (1)	Saw (2)	14
Pumpkin pie	Field (3)			15
Wool, Buttered popcorn				16
Sweater	Field (3)		Saw (1)	17
Bacon pie, Syrup, Cotton fabric, Hamburger			Saw (1)	18
Raspberry muffin, Cotton shirt, Blue wooly hat	Field (3)			19
		Vouchers		20
Carrot cake, Wooly chaps	Field (3)			21
			Land expansions	22
Cream cake, Redberry cake	Field (3)			23
Cheesecake, Ores (Silver, Gold, Platinum)				24
Violet dress, Chili popcorn	Field (3)		Expansion permit	25

Kuva 18: Hay Day progression (part 2), Source Hay Day wikia

Progression itself can be seen as a mix of character progression and spatial level progression. Building the farm includes choices; what products to make and how to customize the farm. The farm itself can be considered as a "character" and to add objects, a certain amount of levels is needed. Same leveling mechanics can be used in role-playing games where the character is required to level up to wield a certain type of equipments. Spatial progression on other hand simply offers new levels, but also new mechanics, resources and areas.

There is different kind of restrictions which limits the players progression. For instance, the farm consists a warehouse and a barn, where the products or crops are held. Both of them have a cap and they can be expanded by collecting rare in-game items. These can be acquired by completing core loop or by performing a straight upgrade to storage facilities using hard currency. The cap slows down the progression, since the player only has limited amount of resources at once. More than that, resources weren't always available to be released effectively to generate more products which leads to progress in the game.

#### 7.4 Retention features

Achievements are designed to offer hard currency for completed task. Nature of the achievements are strongly incremental, tasks that are repeatable and their challenge goes up. For instance, these can be like collect x amount of eggs or complete an activity in certain amount of times. The game also has achievements where there is a time limit. To overcome these

kind of tasks, a player must perform a certain amount of single activity in a period of time. There is also a separate menu for achievements where the player can check the current tasks.

During the test play, achievements were checked, but there was a little tracking how they were progressed. The tasks were almost completed by just playing the game itself. Occasionally when hard currency was needed, there were more tracking. Although the achievements were incremental, they were a minor factor in case of learning the game. The game itself can be considered functional where the player can learn the mechanics and rules at the start. Timed achievements weren't completed as much as the others. As they may be engaging, requiring a certain amount of playtime at once, they felt like tying the player too much in exchange for lesser rewards. Achievements aren't designed as "major goals" in Hay Day, so pursuing them felt like they were not worth the tracking and completing. However, hard currency as a reward was an incentive that made some attention towards the achievements.

Rewarding consists gained hard currency for level ups and achievements. Player can also get randomly rewarded when completing the core loop. Rare items can be found during the completion of core loops. An interesting aspect for rewarding is also the amount of new content (e.g new facilities or crops) that the game offers when leveling up.

As it can be seen in progression chart, level ups don't provide much hard currency and hard currency rewarding is based more on achievements. As mentioned, the game provides a decent amount of content almost in every level at the start. Content isn't restricted, and the game has quite strong unlocking mechanics. Rare items were rewarded quite fractionally, but more than that, they were given unevenly. For instance, if the player wants to expand either of the warehouse buildings, he/she needs certain amount of all three (3) different items. It was notable that the game rewarded a lot of one of the three items, but the rest were harder to collect. This can be considered also as one of the game's monetization features, since the rest of the needed items can also be bought. It can be seen that the game is designed to frustrate players to make an in-app purchase.

Social play is present in road shop and community events, but the game also allows players to visit in each other's farm. Assistance is a major factor what comes to social play. For example, the game consists certain items such as trees or bushes, which will perish after certain times of harvesting. Another player can recover the plant once after perishing, otherwise the land-cleaning items are needed. A second example for assistance includes the help for filling the daily shipping orders after the boat is unlocked. A player who got assisted, is able to send gift cards to person who helped him/her. A certain number of cards can be exchanged for unique items.

Road shop provides an option to sell products to other players. If the player needs a specific item, one way to find that is to search others road shops. The shop also provides access to another player's farm. The farm can be viewed, but also assisting tasks can be performed. Player's farm itself allows players to express themselves. Other players can see the amount of progression that the player has made. The players are also able to customize their farms with plenty of options.

Neighborhoods serves as an in-game community. Members of the neighborhood can participate in neighborhood derby, where different co-operative tasks occur. The more co-operative tasks community finishes, the more points are awarded which leads to increased standings among all communities.

Social play may be the one of the best retention mechanics what comes to Hay Day. The game allows players to add friends with other farms. With each other's assistance, friends can make progress together and learn from each other. In some cases, a "playful competition" may occur if players want to compare their farms in case of who got the better one. While testing the game, neighborhoods weren't played that much. As a more of a casual player, casual factors such as building the farm outweighed the competition aspect. Competition provides a self-expression aspect with all members of a community due the achievable standings. As the competition may be more important to others, assisting factors felt more meaningful, especially when co-operating with a friend.

Even without added friends, the game links players and encourages to social play. As mentioned, trade in road shop includes products that can be sold. Players can try to maximize their profits, or they can attract another player to visit their farm with low prices. With a possibility to play the game without added friends, is also an advantage. It can be seen that the game is designed around the social play and communities.

## 7.5 Monetization features

In-app purchases consist an option to buy both hard -and soft currency. There are six (6) price tiers included in basic IAP's in both. To perceive the values of IAP, basic purchases (hard currency) are marked in below table. Values are based on observations through the playing. Purpose of demonstrating the skipping costs for completing the wait loop is to get some kind of picture about the pricing in general. Although the sampling is quite small, observations showed that "basic skipping costs" tend to vary in every 30 minutes at first. Major amount of produced goods' waiting time is placed around timeframe of 1 minute to 8 hours. When looking the table, 2,29€ IAP provides approximately 40 hours of wait loop skipping.

Taulukko 1: Hard currency purchases, Hay Day

Purchase	Amount	Price/diamond	Cost of skipping/loop (diamond)
2,29€	50	0,046€	<30min = (1;2)
5,49€	130	0,042€	30min-1h = (3)
10,99€	275	0,04€	1h = (4)
21,99€	570	0,039€	1,5-2h = (5)
43,99€	1500	0,029€	2,5h-3h = (6)
109,99€	4000	0,027€	4h = (7)
-	-	-	6h = (8)
-	-	-	8h = (10)

As the table shows, player is gaining most value from the last purchase. When looking at the most expensive purchase, it can be seen that the price per diamond is almost the same comparing to 43,99 € purchase with over a half of the price. The gap isn't that significant compared to total value of low tier purchases. It's notable that most value is gained by investing over 100 euros into game. Although the player is gaining highest value, the purchase may seem as a pricing strategy where the significantly expensive price tier is added.

In-app purchases have their own menu, which is located on top of the screen. Menu is easily accessible with a clear UI. Besides of skipping, hard currency can be used to buy storage or area expansion items. Storage expansion is designed to frustrate players to spend hard currency. As mentioned at the rewarding section, rare items are rewarded unevenly. Decreased amount of currency in general may lead to another purchase. During the test play, hard currency was mainly used to gather expansion items and more slots in road shop. Cap was reached in storage buildings often, and it was considered maybe the most irritating thing in the game. As noted, the player doesn't have an option to gather unlimited amount of resources at once, so they can't be freed more simultaneously to product generation. Progression restriction can be considered an efficient way to monetize due to its frustration aspect.

Basic purchase tiers aren't the only way to make an IAP. Hay day tries to monetize players with different discounts, offers and packs. A notification occurs, and the offer captures the whole screen space. During the earlier test play, 5,49€ purchase was made in. After that, different kind of discount offers occurred. Offers and their discount amount may vary depending if the player has made the purchase at first place.





Kuva 19 In-game offers (print screen), Hay day by Supercell

While playing, the game offer windows were mainly ignored and simply closed. Offers weren't seen as irritating and there was only a little attention paid to them. As it can be seen, all of the offers have time limit, which can lead to a case where losing the deal. As a more "price-sensitive" player, there were no buying urgency in case of timed offers. In addition, the discounts weren't a large enough to make a purchase.

Hay Day doesn't have much of advertisements in the game. Ads are only used in form of rewarding video ads. Twice a day, a player is able to watch an ad in return of in-game items. Type of rewarded items varied mainly between decorative items, land-cleaning items, and expansion items. In addition, if the player makes an IAP, he/she can claim the rewards without watching the ad.

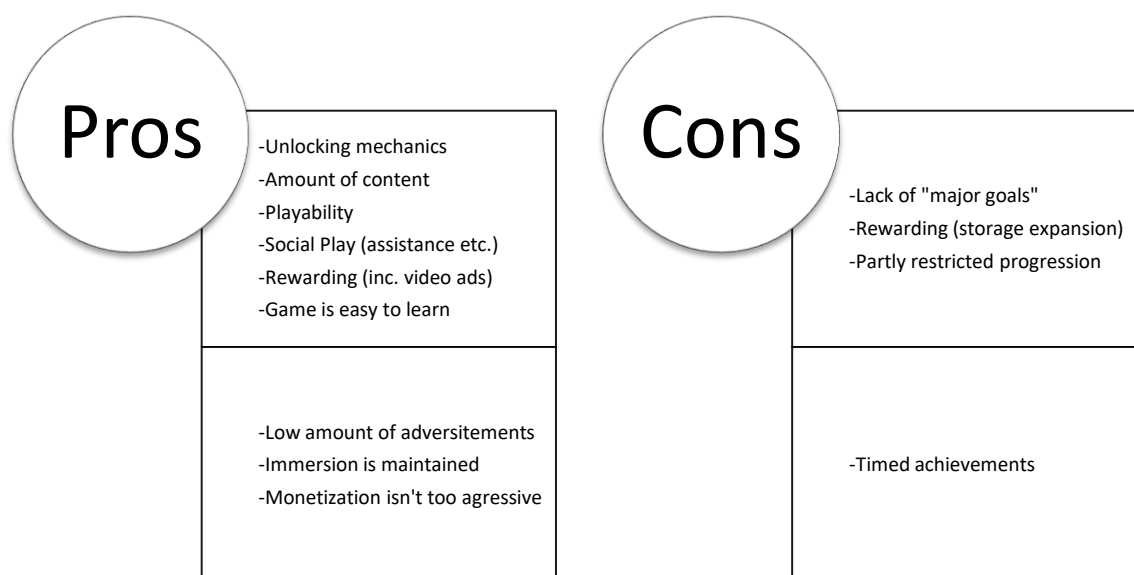
The game was considered highly user friendly in case of advertisements. With the absence of banners and interstitials, immersion was maintained through the whole game session. Gained rewards motivated to watch the ads on daily basis. With a restriction to watch the ad only in twice a day, there were higher interest to watching the ad. It became a routine on daily playing whenever the ad was available.

## 7.6 Pros & Cons

With user friendly approach, playability and strong retention features, Hay Day can be considered a quality F2P mobile game. Content isn't restricted, and the monetization focuses on as-

pects like convenience (e.g skipping) and customization. Since the game is casual, competitive advantage can't be achieved, partly excluding the neighborhoods. Community benefits high level members in case of their ability to contribute more by completing several tasks. The game is strongly designed around social play and co-operation. Strong unlocking mechanics with lots of customizable items increases engagement and makes the game enjoyable. With minimized advertising, Hay Day provides user friendly experience since the session isn't interrupted by ads.

Achievements provides hard currency in game, but there aren't major goals in achievement sections. In addition, achievements also tend to be similar. Storage expansion rewarding can be seen as monetization feature which created some frustration when progressing in the game. All in all, pros and cons can be seen in below picture.



Kuva 20 Pros & Cons, Hay Day

## 8 Overall Conclusions

User experience is a broad term including usability, game system and psychology. As mentioned, after the developer's mindset is implemented into game, players then receive different perceptions and responses from the product. Understanding the ARM-model is important to perceive player's process from acquisition to monetization and all the way to player's churn. Retention includes learning and engaging stage where learning is converted to routine. When players are engaged and fans of the game, monetization features are used to convert players to payers.

Usability tends to have an important role when it comes to learning. Usability includes game mechanics, UI and gameplay. UI provides graphics, feedback and ease of use to make the game functional, which allows players to play the game without any previous experiences. Game consist a core loop, which is usually completed over again in F2P games and the game progression system is built around the core loop. In learning stage, achievements or tasks can be used to guide and reward players for completion. They are also used to increase motivation to make the players progress further.

Engaging includes all of the retention features mentioned in this thesis. Features are used to keep players interested and keep the core loop sustainable. Play motivations appeared to be one of the key drivers for players. Motivational factors were spotted in challenge, rewarding, achievements and social play. Engaging is about providing best possible experiences to the players. Meanings of these experiences can be approached by examining what kind of responses and perceptions player can receive from the game. Feelings are highly subjective, and they vary a lot between different players. In general, rewarding consisted feelings like enjoyment, fun, sense of accomplishment, anticipation and self-expression. Social play on the other hand provides trust and bonds between players, co-operation, and motivational factors like competing. Learning from the others and self-expression were also seen as a part of social play.

After the players are engaged, it's more likely to convert existing users. In F2P games, monetization features include in-app purchases and advertising. IAP's are usually designed around dual currency system, where currencies can be bought by using real money. Hard currency can be used for values such as convenience, content, customization and competitive advantage. For instance, selling time is used to monetize players with limitations in game progression. With different pricing models and offers, buying behaviors can be influenced by setting time limits and different price tiers.

Balancing should be taken in consideration to make the game user friendly. Money can be an alternative way for progressing the game, but it shouldn't restrict progression by too much in case of frustrating players. In addition, if the game is competitive, IAP's are tricky to design due to aspect of fairness. Buying an edge that affects gameplay shouldn't be too high. Competitive game doesn't make any sense if a victory can be bought by using only real money.

Advertising is an indirect form of monetization where third party is included. Ads are used for creating revenue to developers, but also raising brand awareness to publishers. They can appear in forms of interstitials, banners, offerwalls and rewarding video ads. Advertisements tend to have effects on player's immersion, playability and feelings. Pop-up ads can be highly

effective, but they can interrupt gameplay and therefore harm immersion. Due to their intrusiveness, player may feel distracted, interfered and annoyed.

Non-intrusive ads are considered to be more user friendly. These include rewarded video ads. Watching is optional, but more than that, the player is rewarded by virtual items. Rewarding motivates players to keep watching ads, but it also may engage players to keep playing further due to free items given. Rewarding video ads can be seen favorable option for players to "pay" for the game. In case of advertisements, they are an effective way to monetize players who aren't ready to pay real money for the game.

Goal for monetization is to convert players, but it shouldn't end on one purchase. F2P games can be seen as services where their quality can be measured by the level of user experience. Retention features along the usability are factors that affect engagement, including learning, feelings and play motivations. Monetization should be balanced to not to harm retention, which is a key factor for creating positive user experience and engagement. Retention features focus on creating the experiences while monetization features should concentrate on maintaining them, certainly not breaking them.

User experience is vital in game development and developers should focus on it to make the games more enjoyable. Since app stores are crowded, a way to stand out is to provide content which keeps players more retained. Great user experience may ease the acquisition of retained players by providing easy learning to engage players. With these players, natural visibility of the game increases in case of virality.

This thesis will be utilized in further game development projects what comes to principal company. As a silent partner in team of three, this work has been shown to co-founders who are operating in programming and graphical design. Thesis is based on many sources of industry researchers and will be considered succeeded, the more of the user experience aspects are utilized and taken in consideration when making new decisions in game design. The purpose is to bring out visions about the user experience in general, but also provide guidelines for creating better retention -, and monetization strategies.

## Lähteet

Nations, D. 2017. What is Freemium? And Is Free-to-Play Actually Good for Gaming? Lifewire 3/2017. Viitattu 19.2.2018 <https://www.lifewire.com/what-is-freemium-1994347>

Stephan, G. Michael, L. Dieter, M. 2010. Logic and structure of the computer game. Universitätsverlag Potsdam, 2010  
[https://books.google.fi/books?id=Pvl4TuxdETEC&pg=PA150&lpg=PA150&dq=game+structure&source=bl&ots=d9qVha3TR-&sig=uR-bUkUJLzPw39S3JXJ1fe4mUE8E&hl=fi&sa=X&ved=0ahUKEwiGhaS\\_jPzWAhUCO-poKHcVrC\\_44ChDoAQg8MAQ#v=onepage&q=game%20structure&f=false](https://books.google.fi/books?id=Pvl4TuxdETEC&pg=PA150&lpg=PA150&dq=game+structure&source=bl&ots=d9qVha3TR-&sig=uR-bUkUJLzPw39S3JXJ1fe4mUE8E&hl=fi&sa=X&ved=0ahUKEwiGhaS_jPzWAhUCO-poKHcVrC_44ChDoAQg8MAQ#v=onepage&q=game%20structure&f=false)

Purkiss, P. Khaliq, A. 2015. A Study of Interaction in Idle Games & Perceptions on the Definition of a Game [https://www.researchgate.net/publication/282981063\\_A\\_Study\\_of\\_Interaction\\_in\\_Idle\\_Games\\_and\\_Perceptions\\_on\\_the\\_Definition\\_of\\_a\\_Game](https://www.researchgate.net/publication/282981063_A_Study_of_Interaction_in_Idle_Games_and_Perceptions_on_the_Definition_of_a_Game)

Fullerton, T. 2008. Game Design Workshop: A Playcentric Approach to Creating Innovative Games. CRC Press, 2008 [https://books.google.fi/books?id=OjI-YWtqWxtAC&pg=PA34&lpg=PA34&dq=game+structure+free+to+play&source=bl&ots=AIA81-WSSR&sig=Rc9VTcQV9uhbgHbLMY3Wsm\\_hL5k&hl=fi&sa=X&ved=0ahUKEwirjuuggfXWAhVnL-ZoKHddACdAQ6AEIZTAI#v=onepage&q=game%20structure%20free%20to%20play&f=false](https://books.google.fi/books?id=OjI-YWtqWxtAC&pg=PA34&lpg=PA34&dq=game+structure+free+to+play&source=bl&ots=AIA81-WSSR&sig=Rc9VTcQV9uhbgHbLMY3Wsm_hL5k&hl=fi&sa=X&ved=0ahUKEwirjuuggfXWAhVnL-ZoKHddACdAQ6AEIZTAI#v=onepage&q=game%20structure%20free%20to%20play&f=false)

Mullich, D. 2016. The Objectives Of Game Goals, Gamasutra 7/2016. Viitattu 19.2.2018 [https://www.gamasutra.com/blogs/DavidMullich/20160712/276847/The\\_Objectives\\_Of\\_Game\\_Goals.php](https://www.gamasutra.com/blogs/DavidMullich/20160712/276847/The_Objectives_Of_Game_Goals.php)

De Rosa, M. Burgess, M. 2014. Monetizing digital media - trends, key insights and strategies that work. <http://www.omdc.on.ca/Assets/Research/Research+Reports/Monetizing+Digital+Assets/Monetization-report+Digital+Assets.pdf>

Luton, W. 2013. Free-to-Play - Making money from games you give away. New Riders 2013.

Wilson, M. Leaver, T. 2016. Social, Casual and Mobile Games: The Changing Gaming Landscape. Bloomsbury Publishing USA, 2016  
<https://books.google.fi/books?id=nW5yCwAAQBAJ&pg=PT68&lpg=PT68&dq=f2p+business+model&source=bl&ots=hgDuJ-djwga&sig=nfoyx3Gzc0BXP4u7OTu7v8yTIRI&hl=fi&sa=X&ved=0ahUKEwiT-laHqp47XAhVBKVAKHQ1OCrgQ6AEIbTAJ#v=onepage&q=f2p%20business%20model&f=false>

Kamen, M. 2016. Half of all mobile games money comes from 0.19% of users. Wired 3/2016. Viitattu 19.2.2018 <http://www.wired.co.uk/article/mobile-gaming-micropayments-who-pays>

Swerve. 2016. Mobile Games Still Dominated By VIPs. Swerve 3/2016. Viitattu 19.2.2018 <https://www.swrve.com/company/press/mobile-games-still-dominated-by-vips>

Clare, A. 2015. Whales in Free to Play Games. Viitattu 19.2.2018 <http://www.realityis-again.com/archives/3087/whales-in-free-to-play-games/>

Blue Label Labs. 2012. 'Freemium' games pave the way to riches for app developers. 12/2012. Viitattu 19.2.2018 <http://www.bluelabellabs.com/ideatoappster/freemium-games-pave-the-way-to-riches-for-app-developers/>

Moreira, Átila V. M. Filho, Vicente V. Ramalho. 2014, Geber L. Deepening the understanding of mobile game success <http://www.sbgames.org/sbgames2014/files/papers/computing/full/502-computingfullpages.pdf>

Rowles, D. 2017. Mobile marketing - How mobile technology is revolutionizing marketing, communications and advertising. Kogan Page 2017, Second edition

Smith, K. 2016. How to Measure Paid, Owned, and Earned Media. Brandwatch 6/2016. Viitattu 19.2.2018 <https://www.brandwatch.com/blog/define-measure-paid-owned-earned-media/>

Pasqua, R. Elkin N. 2013. Mobile marketing: an hour of a day. Wiley Cop 2013.

Hamilton, J.F. Bodle, R. Korin, E. Explorations in Critical Studies of Advertising. 2016. Routledge, 2016

<https://books.google.fi/books?id=QFpjDQAAQBAJ&pg=PT26&lpg=PT26&dq=user+acquisition+mobile+games+research&source=bl&ots=6mjyQbBc5e&sig=eE5lAiS0X-ECJr1RHpm4T9ua-Og&hl=fi&sa=X&ved=0ahUKEwiVhpesrJHXAhVDUIAKHVJICF44FBDoAQhGMAM#v=onepage&q=user%20acquisition%20mobile%20games%20research&f=false>

Furlan, A. 2017. Cost Per Install (CPI) Buyer's Guide. Business Of Apps 10/2017. Viitattu 19.2.2018 <http://www.businessofapps.com/guide/cost-per-install/>

Raynolds, E. 2014 What is cost-per-install advertising? Phunware 11/2014. Viitattu 19.2.2018 <https://www.phunware.com/blog/what-is-cost-per-install-advertising/>

Viljanen, M. Airola, A. Heikkonen, J. Pahikkala, T. 2017. Playtime Measurement with Survival Analysis. <https://arxiv.org/pdf/1701.02359.pdf>

Carpenter, A. 2017. Why the first ten minutes are crucial if you want to keep players coming back. Medium 11/2017. Viitattu 19.2 <https://medium.com/googleplaydev/why-the-first-ten-minutes-is-crucial-if-you-want-to-keep-players-coming-back-to-your-mobile-game-4a89031b6308>

Clark, O. 2016. Analytics & The Player Lifecycle. Unity 3D 5/2016. Viitattu 19.2 <https://blogs.unity3d.com/2016/05/03/analytics-the-player-lifecycle/>

Minchev, E. Schmitt, T. 2016. Purchasing digital items in free to play games - Investigating personality theory through an explorative study of League of Legends <http://hj.diva-portal.org/smash/get/diva2:956542/FULLTEXT01.pdf>

Hahl, K. 2014. The Success of Free to Play Games and the Possibilities of Audio Monetization. [http://www.theseus.fi/bitstream/handle/10024/79905/Hahl\\_Kalle.pdf?sequence=2&isAllowed=y](http://www.theseus.fi/bitstream/handle/10024/79905/Hahl_Kalle.pdf?sequence=2&isAllowed=y)

Salmond, M. 2017. Video Game Design: Principles and Practices from the Ground Up. Bloomsbury Publishing, 2017

<https://books.google.fi/books?id=Q3Q4DwAAQBAJ&pg=PA247&lpg=PA247&dq=how+ad+monetization+works+in+f2p+games&source=bl&ots=osNZRe0CKm&sig=E4lNftb4rX3QzV4k-Zzg9qs48BE&hl=fi&sa=X&ved=0ahUKEwiv7qfPjKrXAhWJpaQKHRgBDdg4ChDoAQgzMAI#v=onepage&q=how%20ad%20monetization%20works%20in%20f2p%20games&f=false>

Goncharova, E. 2017. Monetization strategies in free-to-play mobile games - Case: From the bench. [https://www.theseus.fi/bitstream/handle/10024/134405/Goncharova\\_Elizabetha.pdf?sequence=1&isAllowed=y](https://www.theseus.fi/bitstream/handle/10024/134405/Goncharova_Elizabetha.pdf?sequence=1&isAllowed=y)

Poels, K. Ijsssteijn, W.A. De Kort, Y. 2010. Digital games, the Aftermath Qualitive Insights into Postgame Experiences - Bernhaupt, R. 2008. Evaluating User Experience in Games. Springer 2010. [https://www.researchgate.net/profile/Yvonne\\_De\\_Kort2/publication/226075575\\_Digital\\_Games\\_the\\_Aftermath\\_Qualitive\\_Insights\\_into\\_Postgame\\_Experiences/links/0deec52c81fba41ecf000000/Digital-Games-the-Aftermath-Qualitive-Insights-into-Postgame-Experiences.pdf](https://www.researchgate.net/profile/Yvonne_De_Kort2/publication/226075575_Digital_Games_the_Aftermath_Qualitive_Insights_into_Postgame_Experiences/links/0deec52c81fba41ecf000000/Digital-Games-the-Aftermath-Qualitive-Insights-into-Postgame-Experiences.pdf)

ISO, 2010. Viitattu 19.2.2018 <https://www.iso.org/obp/ui/#iso:std:iso-iec:25066:ed-1:v1:en:term:3.23>

Sebastian, L. 2017. What Is Games 'User Experience' (UX) and How Does It Help? Gamasutra 10/2017 [https://www.gamasutra.com/blogs/SebastianLong/20171002/306649/What\\_Is\\_Games\\_User\\_Experience\\_UX\\_and\\_How\\_Does\\_It\\_Help.php](https://www.gamasutra.com/blogs/SebastianLong/20171002/306649/What_Is_Games_User_Experience_UX_and_How_Does_It_Help.php)

Hodent, C. 2016. Cognitive Psychology Applied to User Experience in Video Games. 3/2016. Viitattu 19.2.2018 <http://celiahodent.com/cognitive-psychology-applied-to-user-experience-in-video-games/>

Vissers, J. Geerts, D. 2014. Evaluating the User Experience of Tangible Interface Prototypes. <https://lirias.kuleuven.be/bitstream/123456789/454134/1/wip-vissers.pdf>

Bernhaupt, R. 2016. Game User Experience Evaluation. Springer, 2015 <https://books.google.fi/books?id=8lHMCQAAQBAJ&pg=PA191&lpg=PA191&dq=user+experience+mobile+games&source=bl&ots=PpQ6jhKvFw&sig=WQcN8L9pLtqSS-NtTM8wm35eDI94&hl=fi&sa=X&ved=0ahUKewj9momKo7TXAhWDA5oKHZhm-Bew4HhDoAQgJMAA#v=onepage&q=user%20experience%20mobile%20games&f=false>

Rajanen, M. Nissinen, J. 2015. A Survey of Game Usability Practices in Northern European Game Companies. [http://cc oulu.fi/~mrajanen/IRIS\\_selected\\_papers\\_2015\\_Rajanen\\_Nissinen.pdf](http://cc oulu.fi/~mrajanen/IRIS_selected_papers_2015_Rajanen_Nissinen.pdf)

Fabricatore, C. 2007. Gameplay and Game Mechanics Design: A Key to Quality in Video Games. <http://www.oecd.org/education/ceri/39414829.pdf>

Adams, E. 2013. Fundamentals of Game Design. New Riders, 2013 [https://books.google.fi/books?id=Lm1jAgAAQBAJ&pg=PA9&lpg=PA9&dq=gameplay+definition&source=bl&ots=7fFzHvr6\\_c&sig=OLhG7eppe8yyFciLQUOeR-PAuOZ0&hl=fi&sa=X&ved=0ahUKewie262rv8rXAhXnlpoKHcw5CPs4ChDoAQg4MAI#v=onepage&q=gameplay%20definition&f=false](https://books.google.fi/books?id=Lm1jAgAAQBAJ&pg=PA9&lpg=PA9&dq=gameplay+definition&source=bl&ots=7fFzHvr6_c&sig=OLhG7eppe8yyFciLQUOeR-PAuOZ0&hl=fi&sa=X&ved=0ahUKewie262rv8rXAhXnlpoKHcw5CPs4ChDoAQg4MAI#v=onepage&q=gameplay%20definition&f=false)

The Interaction Design Foundation, 2017. User Interface (UI) Design. Viitattu 19.2.2018 <https://www.interaction-design.org/literature/topics/ui-design>

Pihlajamäki, E. 2016. From Desktop to Mobile: UI Patterns for User Interface Adaptation in Games. <https://tampub.uta.fi/bitstream/handle/10024/99541/GRADU-1470209996.pdf?sequence=1>

Fullerton, T. 2014. Game Design Workshop: A Playcentric Approach to Creating Innovative Games, Third Edition. CRC Press, 2014 <https://books.google.fi/books?id=7xjYCwAAQBAJ&pg=PA307&lpg=PA307&dq=functionality+game+design&source=bl&ots=CFw2WwUFxZ&sig=K6Hkv-RDkRAJtrc-C4FSZaPUzCg&hl=fi&sa=X&ved=0ahUKewikzZak38fXAhUJIJoKHTp3DVwQ6AEIcTAJ#v=onepage&q=functionality%20game%20design&f=false>

Debeauvais, T. 2016. Challenge and Retention in Games <https://escholarship.org/content/qt6k3357qx/qt6k3357qx.pdf>

Vankka, E. 2014. Free-To-Play Games: Professional's Perceptions <https://tampub.uta.fi/bitstream/handle/10024/95105/GRADU-1395760771.pdf>

Silvestro, C. 2016. The Secret to Mobile Game Monetization: Retention. LinkedIn 8/2016. Viitattu 19.2.2018 <https://www.linkedin.com/pulse/secret-mobile-game-monetization-retention-christopher-silvestro>

Blair, L. 2011. The Use Of Video Game Achievements to Enhance Player Performance, Self-Efficiency and Motivation [http://etd.fcla.edu/CF/CFE0004471/Dissertation\\_final.pdf](http://etd.fcla.edu/CF/CFE0004471/Dissertation_final.pdf)

Hang, W. Sun C-T. 2011. Game Reward Systems: Gaming Experiences and Social Meanings <http://gamelearninglab.nctu.edu.tw/ctsun/10.1.1.221.4931.pdf>

Grosso, W. 2016 The Science & Craft of Designing Daily Rewards -- and Why FTP Games Need Them. Gamasutra 6/2016. Viitattu 19.2.2018 [https://www.gamasutra.com/blogs/William-Grosso/20160613/274759/The\\_Science\\_Craft\\_of\\_Designing\\_Daily\\_Rewards\\_and\\_Why\\_FTP\\_Games\\_Need\\_Them.php](https://www.gamasutra.com/blogs/William-Grosso/20160613/274759/The_Science_Craft_of_Designing_Daily_Rewards_and_Why_FTP_Games_Need_Them.php)

Bekker, T. Sturm, J. Eggen, B. 2010. Designing playful interactions for social interaction and physical play <https://link.springer.com/article/10.1007/s00779-009-0264-1>

Kotler, P. Armstrong, G. 2014. Principles of Marketing 15th edition. Pearson Education Limited 2014

Moreira, Átila V. M. Filho, Vicente V. Ramalho. 2014b. Geber L. Understanding mobile game success: a study of features related to acquisition, retention and monetization. SBC Journal on Interactive Systems, volume 5, number 2, 2014 <http://seer.ufrgs.br/index.php/jis/article/view/45696/31858>

Scientificrevenue 2017. How to Design an Annuity. Viitattu 19.2.2018 <http://www.scientificrevenue.com/blog/how-to-design-an-annuity/>

Tran, K. 2017. Mobile game developers turn to 'rewarded ads'. Business Insider 8/2017. Viitattu 19.2.2018 <http://www.businessinsider.com/mobile-game-developers-turn-to-rewarded-ads-2017-8?r=UK&IR=T&IR=T>

Wen, Y. 2016. Connecting Mobile Game Advertising with Local Stores <http://tam-pub.uta.fi/bitstream/handle/10024/99651/GRADU-1472824581.pdf?sequence=1&isAllowed=y>

eMarketer 2016. Mobile Gamers Prefer Rewarded Video Ads Within F2P Games. eMarketer 4/2016. Viitattu 19.2.2018 <https://www.emarketer.com/Article/Mobile-Gamers-Prefer-Rewarded-Video-Ads-Within-F2P-Games/1013810>

Wawro, A. 2016. Survey: Video ads are the #1 way players prefer to 'pay' for mobile games. Gamasutra 4/2016. Viitattu 19.2.2018 [https://www.gamasutra.com/view/news/269819/Survey\\_Video\\_ads\\_are\\_the\\_1\\_way\\_players\\_prefer\\_to\\_pay\\_for\\_mobile\\_games.php](https://www.gamasutra.com/view/news/269819/Survey_Video_ads_are_the_1_way_players_prefer_to_pay_for_mobile_games.php)

AdColony 10/2017. Case Study: Rewarded Video: Revenue Enhancer or IAP Cannibal? <https://www.adcolony.com/reports/2017/10/17/case-study-rewarded-video-revenue-enhancer-iap-cannibal/>



Kuviot

Kuva 21 Examples for structural dimensions

Kuva 22 ARM-funnel (Slideshare 2015, 3) <https://www.slideshare.net/joanby/acquisition-retention-monetization-feeding-the-funnel>

Kuva 23 Landing page of Bitcoin Billionaire by Noodlecake Studios inc. print screen (Google Play 2017)

Kuva 24 Fiksu CPI index 2015-2016 <http://www.mobyaaffiliates.com/blog/average-cost-per-install-apps/>

Kuva 25 Cost per loyal user iOS app (US) <http://www.mobyaaffiliates.com/blog/average-cost-per-install-apps/>

Kuva 26 Retention variables

Kuva 27 Mobile games retention rate (Apptentive 2015) <https://www.apptentive.com/blog/2015/04/09/the-data-behind-customer-acquisition-and-retention-for-f2p-mobile-games/>

Kuva 28 Service Funnel (Unity 3D 2016) <https://blogs.unity3d.com/wp-content/uploads/2016/05/service-funnel-new.jpg>

Kuva 29 Premium currency as a part of Luton's terms of 4C's

Kuva 30 Different aspects of UX, referred to Vissers & Geerts, 2014

Kuva 311 Multidimensional UX by Takatalo, Häkkinen, Kaistinen, Nyman (Bernhaupt 2008, 26) [https://www.researchgate.net/profile/Yvonne\\_De\\_Kort2/publication/226075575\\_Digital\\_Games\\_the\\_Aftermath\\_Qualitative\\_Insights\\_into\\_Postgame\\_Experiences/links/0deec52c81fba41ecf000000/Digital-Games-the-Aftermath-Qualitative-Insights-into-Postgame-Experiences.pdf](https://www.researchgate.net/profile/Yvonne_De_Kort2/publication/226075575_Digital_Games_the_Aftermath_Qualitative_Insights_into_Postgame_Experiences/links/0deec52c81fba41ecf000000/Digital-Games-the-Aftermath-Qualitative-Insights-into-Postgame-Experiences.pdf)

Kuva 32 Game Usability

Kuva 33: Player patterns (Bekker, Sturm & Eggen, 2010) [https://static-content.springer.com/image/art%3A10.1007%2Fs00779-009-0264-1/MediaObjects/779\\_2009\\_264\\_Fig6\\_HTML.gif](https://static-content.springer.com/image/art%3A10.1007%2Fs00779-009-0264-1/MediaObjects/779_2009_264_Fig6_HTML.gif)

Kuva 34: Bundle pack; *Trials Frontier* by RedLynx <http://www.pocketgamer.biz/feature/59787/a-spectacular-leap-the-making-of-trials-frontier/>

Kuva 35: Video ad factors (BusinessInsider, 2017) <http://www.businessinsider.com/mobile-game-developers-turn-to-rewarded-ads-2017-8?r=UK&IR=T&IR=T>

Kuva 36: Core loop Hay Day

Kuva 37 Hay Day progression (part 1), Source Hay Day wikia [http://hay-day.wikia.com/wiki/Experience\\_Levels](http://hay-day.wikia.com/wiki/Experience_Levels)

Kuva 38: Hay Day progression (part 2), Source Hay Day wikia [http://hay-day.wikia.com/wiki/Experience\\_Levels](http://hay-day.wikia.com/wiki/Experience_Levels)

Kuva 39 In-game offers (print screen), Hay day by Supercell

Kuva 40 Pros & Cons, Hay Day

Taulukot

Taulukko 1: Hard currency purchases, Hay Day

