



EVALUATING FREE-TO-PLAY MONETIZATION MECHANICS IN MOBILE GAMES

**Case: Improvement proposal to
Supersonic - game**

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ABSTRACT

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Evaluating Free-to-play Monetization Mechanics in Mobile Games
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The purpose of this thesis was to explore the topic of monetization in mobile games. To set a basis for my research, I explained terms “acquisition”, “retention” and “monetization”, as they are often used together to describe free-to-play business, the current dominating business model in mobile game industry.

The research problem was that how the customer's mobile game could be more profitable and the goal was to make an improvement proposal for it. The empirical part consisted of analysis evaluating monetization mechanics on the case game and two similar games.

The results suggest that besides a solid core game, there needs to be real metagame which creates progression and encourages players to come back frequently. Finally there needs to be valuable things to buy with real money.

The findings indicate that *Supersonic* should focus to one game mode and add missions as part of its core game. Lack of metagame should be fixed with clear indicators of progression, continuous rewards and more social leaderboards.

Key words: mobile games, free-to-play, monetization, game design

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ABBREVIATIONS

App	Application
Android	Mobile operation system developed by Google
ARM funnel	Visualization of free-to-play business with terms: acquisition, retention and monetization
Core loop	Repeating chain of actions in the core of the game
F2P	Free-to-play
IAP	In-app purchase
iOS	Operating system of Apple's mobile devices
Metagame	Features that adds gameplay value without actually adding gameplay
Monetization	Process of turning something into profit

1 INTRODUCTION

Free-to-play is a business model that has been dominating in the mobile game industry for the last couple years. The purpose of this thesis is to evaluate monetization mechanics in free-to-play games. My customer Kuuasema is a mobile game studio based in Helsinki and their mobile game called *Supersonic* has reached over two million downloads but has yielded profits poorly. The research problem is that how their game could be more profitable and the goal is to make an improvement proposal for it.

To explain how the free-to-play business works I will explain terms “acquisition”, “retention” and “monetization”. I will also look briefly at the reasons for free-to-play’s popularity.

To limit the focus of my thesis, the empirical part focuses studying mechanics and methods that make the users return to the game and finally turn into paying customers. Besides the case game I also analyze two other games from the same endless arcade genre: *Subway Surfers* and *Mega Dead Pixel*.

Finally I make the case how *Supersonic* could be improved with single game mode, engaging missions and real metagame.

2 FREE-TO-PLAY – THE LEADING BUSINESS MODEL OF TODAY

On a macro level monetization means the business model and logic behind a product and how it generates money. On a micro level it is all the methods and mechanics that make your users pay you.

The focus my thesis is in the micro level but in order to understand the big picture better I spend this chapter also opening up the game business on a macro level. Games and their business models have been developing so fast with the rise of mobile platforms like iOS and Android, social platforms like Facebook and digital distribution channels like Steam that the norms and best practices are constantly developing.

In this chapter I will be giving a brief introduction to major business models used in the game industry and take a deeper look into the free-to-play model. I will also be explaining free-to-play business theory called ARM funnel and what whales have to do with that.

2.1 History of business models in game industry

In the beginning when games were only small business, floppy disks were traded in school campuses or sold only in special stores. After a while they moved in to retail outlets and arcade halls. Since then arcade halls have pretty much died away, though they never even really profitably existed here in Nordic countries. Retail on the other hand is still one of main distribution channels and a good example of its power is recently released *GTA V* that became the fastest selling entertainment product (games and movies) ever surpassing \$1 billion revenue in only three days (Take-Two 2013). Retail has been the main sales channel for *GTA V* but it is also available digitally in PlayStation Store and Xbox Live Marketplace. In the computer game market Steam is the biggest player with over 50 million users and 3000 games (Steam 2013). All the games in Steam can be bought online and some retail packaged games require activating the game in Steam. In the last few years the evolution has been headed towards digital but retail surely will stay strong for quite a while.

Next shift came with the popularity of MMOs (Massive Multiplayer Online) that offered large synchronous multiplayer battles. This meant expensive server costs and upkeep which is why developer started charging for subscription fees. First games to do this charged huge hourly fees because server upkeeps were expensive and user bases small but eventually monthly subscriptions became the standard. Most famous example is *World of Warcraft* that peaked in 12 million monthly subscribers (Forbes 2013). You had to buy the original package (and later expansion packs) and pay a monthly subscription fee in order to access the game. *World of Warcraft* was followed by many who tried to follow its success but nowadays subscription fee based business models have lost their popularity. In mobile, subscriptions are rare for games but they are used with music or TV related apps like *Spotify* and *Netflix*.

The business model behind retail and basic digital downloads is simple: customer gives money and receives the product. This was revolutionized by the rise of Facebook and smartphone platforms iOS and Android. First of all both all these platforms are digital only and the games nowadays are using different business models than just paying upfront like they were mostly sold before. Fixed price is a popular model in mobile platforms as well and the normal prices vary from one to few euros. In-game microtransactions had existed in web games before but mobile platforms and Facebook made them mainstream. They often exist in paid games as well but are normally associated more firmly with free-to-play games.

2.2 Popularity of free-to-play

Free-to-play (F2P) is a business model that has been dominating in the mobile game industry for the last couple years. It means giving out the initial product for free and the revenue is charged from advertisements and in-game microtransactions or as they called in mobile industry, in-app purchases (IAP). Total revenue generated for F2P games surpassed paid games in 2011 on iOS (Flurry 2011). If we take a look at the current iPhone top grossing games charts in the USA, 10 games out of 100 are using paid model rest being F2P and only 3 games don't have IAPs (App Annie 2013). In table 1 you can see the big picture with both iOS and Android included for all applications and not just games. Free applications are forecast to be 91% of all downloads in 2013, increasing to 94.5% by 2017.

Downloads	2011	2012	2013	2014	2015	2016	2017
Free	23,266	57,331	92,876	127,704	167,054	211,313	253,914
Paid-for	3,053	6,654	9,186	11,105	12,574	13,488	14,778

TABLE 1. Mobile app store downloads, worldwide, 2011-2017 (millions of downloads) (Gartner 2013)

There are many ways to utilize IAPs and the purpose of this thesis is to study monetization mechanics of the successful reference games and then draw conclusions on how to use them effectively in the case game. Later chapters will dig deeper on what kind of IAPs these F2P games are using but briefly described they are normally virtual goods related to convenience, e.g. more bag space; progress acceleration, skipping effort with experience boosters; and vanity, character customization.

Best thing about free-to-play for both customers and developers is the potential reach for the widest possible audience by removing the barriers of entry. F2P, when done right, satisfies customers at all price levels. People can pay in proportion to their preferences but majority will play without paying. Non-paying customers still act as an important viral channel and target for advertising. More importantly F2P removes the upper limit of price devoted fans can spend. Lovell and Fahey argue that in contrary to previous business models, developers need to get used to giving away their best assets for free and start selling emotion instead of content (Lovell & Fahey 2012).

Developers opt for F2P model because of the potential for huge scalability followed by even bigger revenues than in the fixed price model. Most F2P games can be played totally free and it is the user's decision whether to spend money or not. Users are willing to spend money on things they find valuable but still the biggest advantage F2P has over regular model is how easy it is to start playing them. Nowadays users roaming in the app markets are saturated with different choices for entertainment and the barrier of entry between for trying a free application and a one with 1-4 euro price tag is understandable and this also projects in the download numbers in table 1. The customer is devoting his/her time and possibly money for exchange of entertainment but people have different tastes so from customers point of view it is nice that you can try out the

game for free and see whether to keep playing or move on rather than buying a pig in a poke.

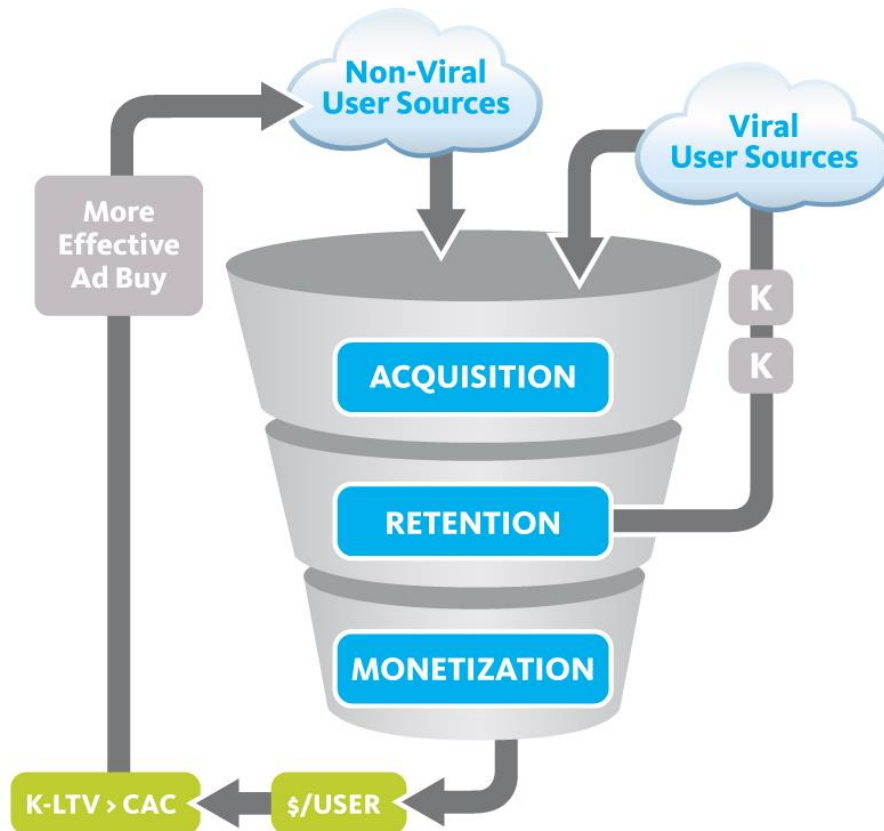
One big advantage for developers especially in the PC is that free-to-play model nullifies piracy which has always been a big problem for computer and console games but also for mobile, especially on Android. F2P makes everybody a legit customer and allows converting players who normally would have only pirated the game into paying customers. Normally protections trying to prevent piracy are cracked in the same day game gets released but F2P games are distributing the game client for free and unlocking paid content is handled on secured servers of which bypassing is hard or impossible.

2.3 Purchase funnel for free-to-play business

Purchase funnel, originally developed by E. St. Elmo Lewis in 1898, is a well-known theory used by marketers and salespeople to visualize the lifecycle of customer from first encounter to purchase decision. It demonstrates the different phases that customer goes through related to time. The further you go into the funnel (also referred as AIDA) the more customers are lost in the progress. First phase and the thickest part of the funnel “awareness” is the point when customer notices your product and is followed by “interest”, active interest towards your product. Third phase “desire” is when customer gets excited and gets an urge for purchase and finally “action” means taking the steps to purchase the product. (Fields & Cotton 2011, 124.)

What does this have to do with game business? Game companies and consultants use revised version of this called the ARM funnel. It helps to understand the essence of free-to-play business. It boils down to questions on acquisition: how to get players, retention: how to retain players and monetization: how to monetize players you have? (Fields & Cotton 2011, 125–126)

Kontagent ARM Funnel



PICTURE 1. ARM funnel visualizing the F2P business (Kontagent 2012)

F2P changes how developers need to view their users and handle marketing, when the traditional game business has followed the path of AIDA funnel and all legit customers have paid for your game. The mindset changes with F2P because big majority of users in F2P games don't spend a dime on your game but every player is still valuable in other ways. All users help you to gain more organic installs by better chart position in market places and through word of mouth. This means that non-paying users help with game's virality which is equivalent to money spend on marketing. Seufert (2013) argues that successful virality is not a mechanic you add as a feature later in the development, but instead an essential part of the design since the beginning and part of the core loop of the game. This doesn't mean that traditional ways like advertising ergo paid installs, PR and marketing campaigns aren't needed but you have to measure when, where and how to use your money. Advertising is in the beginning is particularly important before

you find your early adopters and establish a stable user base that can grow also organically. When your game monetizes profitably, meaning the life time value (LTV) of users is bigger than the cost of acquiring them ergo cost per install (CPI), earned revenue can be spent on acquiring more users in order to accelerate growth.

Big user bases are the fuel of F2P games because of the nature of F2P games. Only small percentage goes through the whole ARM funnel so there needs to be constant stream of new players.

Retention means all the mechanics that increase the stickiness of your game and are the reason beside the core loop why users keep returning. Having users to come back to your F2P game is vital for it to be successful because monetizing users happens during a longer time span. Retention is said to be maybe the most important metric for F2P games. This is calculated by dividing your daily unique users (DAU) with your monthly unique users (MAU) on any given day. Analysts often measure the retention of day 1 after the initial install, then day 7 and day 30. The number illustrates the addictiveness and stickiness of your game. Without high retention it doesn't make sense to spend huge amounts of money on acquisition of new users.

According to Lovell, first your game needs to have solid core loop and then engaging game mechanics that make sure that players keep coming back frequently. Techniques like this include for example: rewards, progression, leveling up, narrative, high scores and competition. According to Lovell it is important to have these mechanics happening in different layers, meaning that they appeal to various kind of people and happen in different time loops. An appointment technique refers to ways of giving people reason to log back into the game, e.g. finishing buildings or daily rewards. (Lovell 2013.)

Most of the users are freeloaders but some turn into true fans that are the financial backbone of your business. According to Lovell's numbers based on publicly released data by game companies on average have only 2% of total users who convert into paying customers. These users are often split into three customer segments originally used to describe customers in the casino business: whales, dolphins and minnows. Minnows spend the smallest possible amount, normally 1-2 dollars per month. They are 50% of the paying users and bring around 11% of the total revenue. 40% of users are dolphins who are in the middle ground spending 5 dollars and bringing 44% of the revenue. Rest

10% are whales, the big spenders, who bring another 44% of the revenue using approximately 20 dollars per month. (Lovell. 2011)

In comparison to previous numbers Joakim Achrén (2013), previous director of analytics at Supercell, ergo the person behind all the numbers of *Clash of Clans* and *Hay Day*, said that the numbers would be minnows €5 monthly for 5-15% of total revenue, dolphins €20 for 15-25% and finally whales €200 for 60-80%. In reality these numbers vary strongly between games in different genres but the tendency is the same, small percentage of people bring majority of the revenue.

In the following chapters I will be evaluating monetization mechanics in more detail and making an improvement proposal for my customer's game.

3 IMPLEMENTATION OF ANALYSIS

This thesis studies a new phenomenon ruling in the game industry called free-to-play. The research problem is that how the customer's game *Supersonic* could generate more revenue, in other words how it could monetize better? Purpose of this thesis is giving an improvement proposal to the customer's game *Supersonic*, so the focus in the analysis is gathering practical information and suggestions for that.

In this chapter I'll be explaining what qualitative research means and why it is used in this thesis. I'll also be describing the objectives that I set to limit the focus of my analysis and finally evaluate the validity of this research.

3.1 Planning

Qualitative research fits best for analysis in this thesis because the research problem is not well-known and the F2P business is still developing (Kananen 2011, 41). No one can define exactly how F2P games should be done and this thesis analyzes non-measurable opinions concerning this new phenomenon ruling in the game industry. Qualitative research pursues deep understanding of the research problem by searching answers to questions what and how (Kananen 2011, 35).

It also fits best the customer's wishes because they wanted improvement suggestions for on one their games, while also concluding best practices of F2P monetization. It was agreed together that deeper look in couple similar cases would offer more useful results, than getting a cursory view of a bigger pool of games. When quantitative research deals with numbers and the relationships between them, qualitative research on the other hand uses smaller and more focused samples (Kananen 2011, 37).

The phases of the research followed the normal structure of a qualitative research: planning, data collection, analysis and interpretation (Kananen 2011, 36). Planning consisted of finding the right focus for the research in cooperation with the customer, going through resource materials and writing the theory section of this thesis. Data collection and analysis was done by empirical study by playing selected games and writing analysis based on the objectives listed later in this chapter. Interpretation included the conclusions in other words the improvement proposal for the customer's game.

3.2 Methods of analysis

Qualitative research is applicable when a new phenomenon needs to be understood and answers to questions what and how (Kananen 2011, 35-36). F2P has quickly become the norm in the mobile game industry and this research wants to acquire a deep understanding of this phenomenon. The hypothesis is that successful games are doing something right and the point of this research was evaluating similar and extremely well profitable games similar to the customer's game *Supersonic*.

The ARM funnel, explained in the earlier chapter, was used as a theoretical framework. To limit the focus of the thesis I'll only focus to game design related issues: retention and monetization. This helps staying under the scope of the research problem: how *Supersonic* could monetize better? I'm ruling out acquisition and monetization from advertisements because they are under the topic of marketing. Monetization and retention work hand in hand creating the monetization mechanics of the game and they go under the topic of game design.

The data collection was done empirically, by simply playing the reference games and writing the analysis based on my experiences. Retention and monetization being the focus, two main questions were chosen to form the basis of the analysis, but also help myself and the reader to understand what kind of points were brought up in the analysis.

i – What makes the users keep coming back?

ii – How does the game monetize its users?

With these questions the goal was to evaluate methods and mechanics behind the reference games. This means explaining the games' core loops, metagames and what kind of IAPs and in-game items the games are selling.

3.3 Validity of the thesis

Big challenge with this thesis is the validity of the research, meaning whether I'm researching and focusing on the right kind of things (Kananen 2011, 67). The phenomenon is new, which is why the ARM funnel was chosen to help focusing on right issues

and to have a reasonable scope. It is well known and used theory in the game industry and it helped me to clarify my two main objectives described in the earlier sub chapter.

The data collection relies on my own empiric observation which raises its own challenges of being objective. The conclusions will necessarily include my own opinions but the analysis part tries stay as objective as possible. The analysis contains descriptions of the solutions and analysis on the arguments behind them in relation to the research problem. The whole thesis deals with complicated design issues and the best known practices of this moment will have developed to something else after couple years. It is still important to understand the current situation so that the decisions in the future can be well evaluated.

Qualitative research doesn't aim to full generalization, but transferability of the results is still important (Kananen 2011, 68). In this thesis it means that I focus on issues that are important in all F2P games. I point out solutions to those issues from the successful games I analyze, and then evaluate if they would solve the problems of my customer's game and finally offer my improvement proposal.

3.4 Selection of games

Selecting good games for the analysis is also essential for the validity of this thesis. Different games have their own approach to the challenges of F2P games. There are lots of successful games out there but looking at a totally different game, for example *Clash of Clans* by Supercell, and analyzing what it does well, doesn't exactly help with this case. The principles for *Clash of Clans*' success are valid for every game, but for the sake of usefulness of this thesis I wanted more practical examples that could fit straight into the case game. Because of this, the first criterion for selection was that the game must have similar core loop to *Supersonic*, which I'll be covering in the next chapter.

I limited that one of the games has to be a long time success so that we have some solid proof that its solutions work in practice. For the second game I wanted something fresh for the purpose of inspiring more special solutions because the industry evolves so fast that just doing what worked couple years ago isn't enough. *Supersonic* is made only for

mobile which led to the last criterion that the games have to be made for mobile platforms simply because of the big differences between various platforms.

4 INTRODUCING CASE SUPERSONIC

In this chapter I will be telling the story of Kuuasema's game *Supersonic* that has been downloaded over couple million times but revenue wise has been a disappointment. I will be describing what kind of a game it is and point out the weaknesses and problems so that the research in the next chapter can focus on right kind of reference games and solutions.

4.1 History and the numbers of Supersonic

Supersonic is a mobile game created by a small Helsinki based mobile game studio called Kuuasema. It was released on May 2011 on iOS and later same year on Android and couple other smaller platforms. They have tried couple different business model approaches but in the end none of them generated the wanted outcome. They tried F2P and paid versions but the results have been less than desired revenue wise.

In its entirety, the various versions on iOS and Android have reached over 2.4 million downloads but the conversion to paying customers has been bad. Android has generated \$2.100 from paid downloads and IAPs, and \$8.000 from ads. iOS has performed a little bit better by generating \$30.000 from paid downloads, \$4.300 from IAPs and \$5.200 from ads. Such numbers are nevertheless a disappointment and the point of this thesis is studying how the situation could be improved. (Kuuasema 2013).

4.2 Gameplay

Supersonic is essentially an endless arcade game where you ride inside a round 3d tunnel (picture 2) at high speeds trying to collect points and avoid obstacles. Music is also an important factor, immersing the player to the fast flow of the game. Although music doesn't really affect the gameplay the game could be also categorized as a music game because it is such important part of the theme. The gameplay has a lot in common with other endless arcade games but the tilt controls feel like they were from a driving game in contrast to the regular flick controls of infinite runners. Player tilts the device like a steering wheel to control the movement on the walls of the closed tunnel. The camera is in first person view and it is unclear what or who the player is actually controlling.



PICTURE 2. Gameplay screenshots from *Supersonic*

Supersonic has three different game modes where the difficulty and base elements of the game vary but the core loop is always the same: collect points and avoid obstacles. Collecting points increases your score multiplier, which is crucial for good scores. Hitting walls or red mines reset the multiplier so the player to player has to constantly estimate the best possible route.

In a game mode called “classic”, the game starts the slowest and easiest, but the speed and difficulty increases constantly. This game mode is the least forgiving because hitting walls ends the game and there are plenty of mines which reset the score multiplier. The goal is to survive till to the end of the song and to achieve the best score. In the F2P version, only the first level out of four is initially available and unlocking the three more levels costs €0.89. All the levels have unique music and bit varying obstacles. In the paid version (price also €0.89) the levels are all unlocked since the beginning.

In “blitz” game mode player tries to get a far as possible but the rules and features are little bit different. Collecting points also increases the speed besides just score and multiplier. In the beginning there is a decreasing timer of 30 seconds but more time can be gained by collecting clocks. Hitting walls slows the player down for a small moment and resets the multiplier. There are also couple other new items that the other game modes don’t have. One increases your multiplier (picture 3) by one and another one gives credits. Blitz is the only game mode utilizing credits, which can be used in a gear up screen (picture 3) which is also unique to this game mode. The gear up opens always before starting a blitz run and from there the player can activate consumables, one time

boosters that get consumed after one run. First gives a shield that absorbs first wall hit, second gives extra 5 seconds to the timer and third gives a speed bonus.

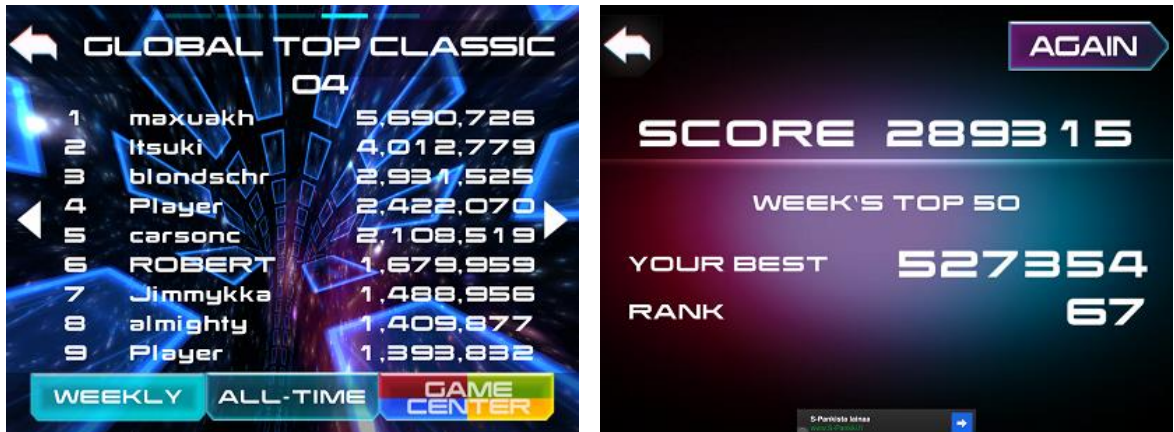


PICTURE 3. The gear up screen and a gameplay screenshot from the blitz game mode

In the third game mode called "mixtapes", players can create own tracks from the music in their own devices or just use the game's own soundtrack. The run always lasts till the end of the song so in a sense it is just a free ride mode and there is no fear of failing. Goal is to get best possible score when hitting walls and mines reset the score multiplier like in the other game modes.

4.3 Lack of metagame and problems with monetization

After a finished run, player is brought to a result screen (picture 4) where the previous score, personal high score and rank in a weekly competition are shown. Top positioned players in the weekly charts are rewarded with credits and they are also shown in the weekly leaderboards. Leaderboards and weekly competitions are great way to create stickiness but the implementation is lacking. Only best 50 names are shown in the weekly and all-time leaderboards. Unless you are in the top 50 you don't know where you are positioned in the ranks so the leaderboards only serve a little group of people. The leaderboard (picture 4) doesn't show your friends score or ranking either although competition with friends should be this game's point. Analysis on next chapter will look at example where these have been implemented well.



PICTURE 4. Leaderboards and result screen from *Supersonic*

The game doesn't really have any real progression and the only metagame is competition for high scores. The problem is that credits can be used in only one game mode and that there aren't really things where to spend them. The improvement proposal will explain how progression, wider metagame and more things to buy with virtual and real money should be implemented.

But how does the game make money? Most of the revenue came from the paid version, but the download volume for that has been below twenty thousand. By distributing the paid version for free in addition to the normal downloads of the F2P version is how *Supersonic* got over couple million downloads. The thing is that the situation wouldn't have been any better even the game had ten times more downloads. Problem is that even if the game hooked true fans the game doesn't offer valuable things for them to buy. The shop in F2P version of *Supersonic* has only three items: remove ads for 0.89€, unlock three classic levels for 0.89€ and finally these both combined with huge amount of credits for 5.49€. The paid version only sells credits in different amounts. The improvement proposal will dig deeper to the solutions for this.

4.4 Core of the problem

The fundamental problem that *Supersonic* has is with its monetization. The game is fun but there aren't things where people can spend their money. The maximum life time value (LTV) for customers is only 5.49€. That is when the true fans buy the combo pack but after that there is nothing where they can spend more money. In practice that hasn't

been an attractive offer and the people who liked the game have only bought the level pack for classic game mode.

An endless arcade game like *Supersonic*, which core loop is basically never ending, the players should never run out of things to buy and there shouldn't be an upper limit of money devote fans can spend. I will look into what those items should be in my improvement proposal.

5 ANALYZING REFERENCE GAMES

In this chapter I will be analyzing reference games after empirically studying them. Focus was in the objectives from the third chapter: what makes the players come back and how are they monetized?

Last chapter touched the weaknesses of *Supersonic* so for this chapter's analysis I chose games that implemented good solutions to these challenges. The next chapter will be explaining how the methods and mechanics from these games could be utilized in *Supersonic*.

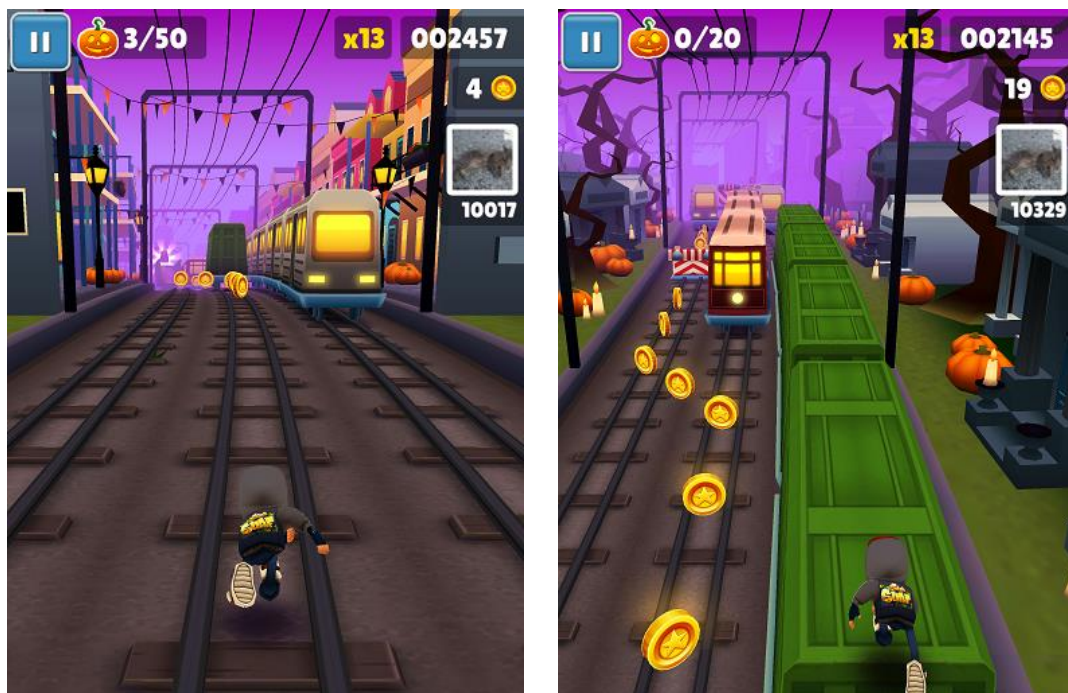
5.1 Subway Surfers

Subway Surfers was chosen for analysis because it is a similar game to *Supersonic* and it has been a substantial hit in many ways. The developers, Kiloo and Sybo, state that the game has been downloaded over 200 million times since its release in May 2012 (Sybo 2013). The focus of the analysis is in the iOS version but it has also been released on Android and later on PC. It has hit number one in iOS (iPhone) overall top downloads chart in 78 countries and number one in overall top grossing charts in 93 countries (App Annie 2013). Altogether it has stayed in various top charts since its launch and can be interpreted as a huge success.

Retention is one of the most important indicators for success because of the nature of F2P. It takes time before users convert into paying customers so the game needs to be engaging enough that the users keep coming back for more. What really makes *Subway Surfers* an interesting case are the extremely good retention numbers. According to the developers, the game reaches stickiness levels of three times bigger than the industry average. 91% of the users return on the next day after downloading the game, 81% after the first week and 60% after a full month. DAU is an immense 25 million users. (Games.com 2013).

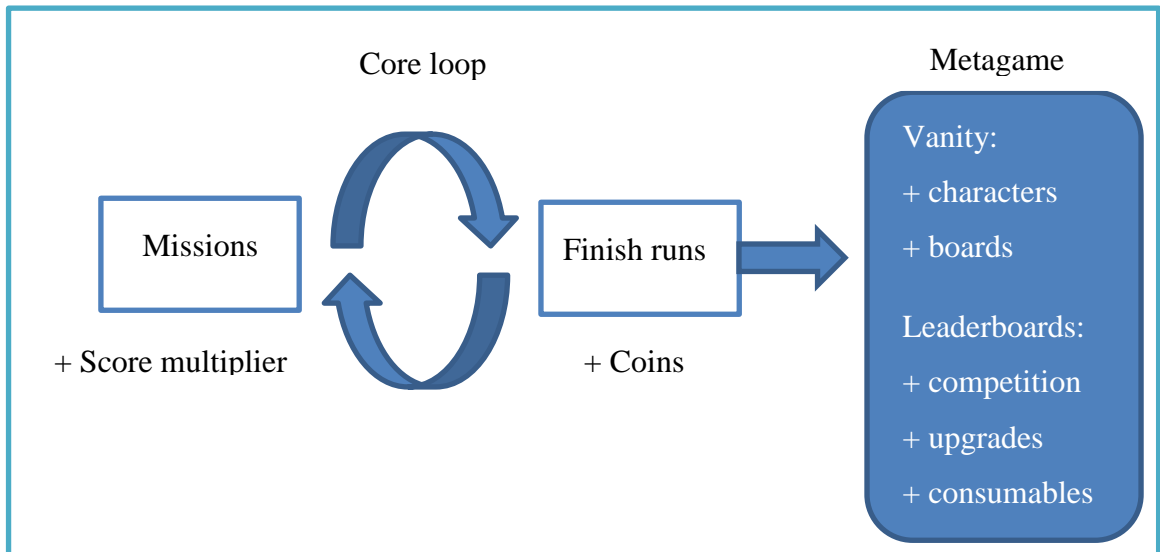
5.1.1 Introducing Subway Surfers

Subway Surfers by its genre is an infinite runner (subgenre for an action/arcade game), where your character is running forward trying to escape a chasing guard (picture 5). Your objective is to survive as long as possible by avoiding obstacles like ongoing trains, railway cars and other objects by dodging, rolling and jumping. The character is controlled from a locked third perspective and the screen is split to three running lanes between which the player moves by side swipes. Jumps and rolls are done by vertical swipes.



PICTURE 5. Gameplay screenshots from *Subway Surfers*

The game is easily accessible due to its simple game mechanics and core loop (picture 6). In short you perform runs where you collect coins and complete missions that increase permanently your score multiplier. The longer you survive the better scores you will get. Duration of one run, i.e. one core loop, can vary from 10 seconds to several minutes depending on the player's skill level. The game starts slow and easy but the difficulty raises incrementally due to the accelerating speed of the game and twisting level design until the player hits an object and the game ends. The game does hit a difficulty cap after a while and in theory a skilled player could continue one run of the game endlessly, hence the genre's name infinite runner, but in practice this means acquired skills through lots of spent hours.



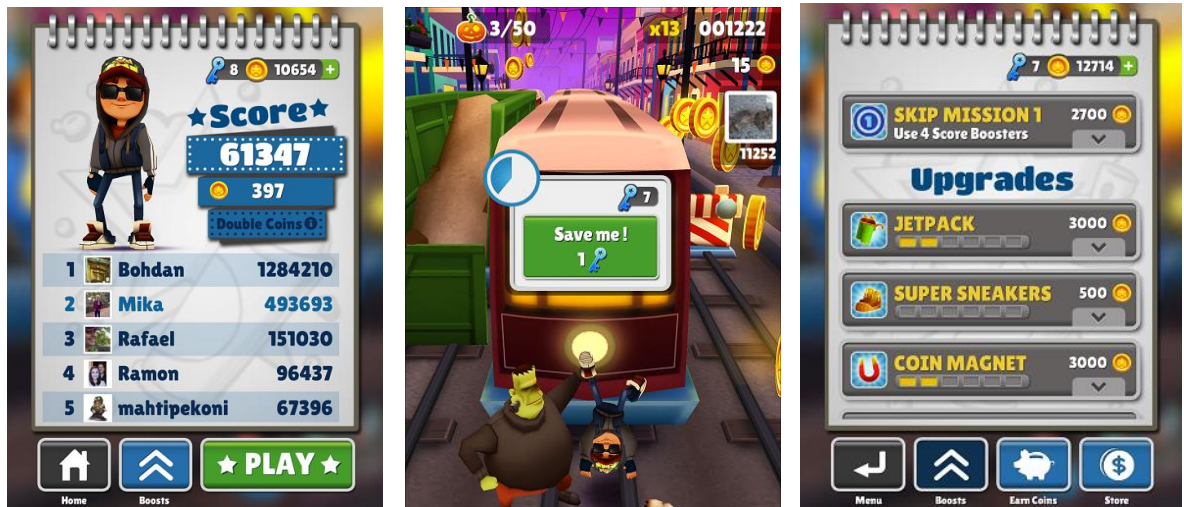
PICTURE 6. Visualization of *Subway Surfers*' core loop and metagame

Subway Surfer has a solid and compelling core loop which is totally free. The addictive metagame, meaning things you do outside the core gameplay that still add value to the overall experience, is what keeps player coming back and finally convert portion of them into paying customers. In *Subway Surfers* it is the competition for high scores and collecting vanity items and upgrading your gear. Using a well-known model for grouping player personalities called Bartle's player type theory, *Subway surfers*' whole monetization is built for one personality type: achievers. They can be described as people who love to get high scores and want to prove their achievements with things like high-end equipment, high level character and other things that show their success in the game. (Gamasutra 2011).

5.1.2 High scores and constancy

One of the biggest things creating engaging experience and thus ensuring players' return is probably the game's competition for high scores. *Subway Surfers* does leaderboards well by making them social and competitive. After login from Facebook or Gamecenter, the in-game screen always shows the closest friend topping your current score (picture 7). The leaderboards are always present because at the game over screen you always see the high score list and where you are currently ranked compared to your friends (picture 7). People appreciate the feeling of leaving something behind and high scores imple-

mented well are a great social way of creating that kind of constancy. Beating your friends' scores is what keeps users playing and coming back.



PICTURE 7. Score screen, pay-to-continue feature and shop screen

One way to monetize this competition is having a so called pay-to-continue feature. In *Subway Surfers* real money can be used to buying keys. When player hits an obstacle and the game is ending, before the game over screen he/she is offered to continue the run in exchange for keys (picture 7).

To assist with the runs players can also buy upgrades and consumables. Upgrades increase the duration of power-ups that the player can pick up during the gameplay. These upgrades mostly help the player gain more coins but at the same time work as a nice place where to spend the incoming coins. Consumables are single use boosters that get consumed after the run. These are common in other endless arcade games too and the most notable ones from *Subway Surfers* are simple score multiplier and boards that protect the player from one hit for a short amount of time. Point of all these is to help beating the high scores.

5.1.3 Progression and vanity

Subway Surfers implements progression well through missions that co-operates nicely with the core gameplay and the competition between your friends. You are always given a set of three missions which all are pretty simple and the point often is to just add little twist to the gameplay (picture 8). Good examples are rolling 30 times during one run, almost hitting a train tree times or longer-term achievements, like collecting 5000 coins.

The thing is that after completing all the three missions your score multiplier increases by one and you get a new set of missions. The multiplier can be upgraded up to a maximum of 30 by doing missions, which is crucial if the player wants to seriously compete with his/her friends for high scores.



PICTURE 8. Mission screen and character shop

There is also one daily mission that can be completed once per day. It is a really simple and fast and it can be completed in couple minutes, but the whole point of it is to improve daily retention as player gets rewarded with in-game currency. The reward grows for consistent completed daily missions and after five days player can earn the best reward. Daily rewards are a widely used method in many top grossing games and goal of it is always the same: get the player return to the game.

Vanity means buyable things that don't affect the gameplay. Generally they are cosmetic customization items. They act as rewards that the players can work towards and they also create good milestones for their progress. Vanity works as a money sink for their in-game currency but also as something true fans are willing to spend their real money. In *Subway Surfers* there are different characters (picture 8), outfits and boards. Some can be achieved after little time, some require more plays and few unique are really expensive.

5.1.4 In-app-purchases and virtual currencies

Most games nowadays use some kind of virtual currencies like coins or diamonds. *Subway Surfers* uses single currency model, where the currency (coins) is earned constantly by playing but can also be bought in various price ranges, ranging from 0.89€ to 89,99€. The cheapest 0.89€ purchase of coins is the most popular one (App Annie, *Subway Surfers*). The keys could be considered as this game's hard currency, but as their utilization is so limited I wouldn't categorize this game to have dual currency system. The amount of coins player picks up in game can also be doubled with an item called "coin doubler" for 4.49€. Permanent accelerator like this is a popular item in many other games in the same genre.

These virtual currencies work as intermediate tool in buying and selling thing in-game. Normally if the game is more complex it uses a dual currency system so that spending soft currency (e.g. coins) can be part of the core game and the hard currency (diamonds) can be used for more premium functions. Soft currency can be given indulgently but hard currency can be normally bought only with real money and earned in small amounts in the game. One reason for using currency systems like this is that by removing the link between virtual currency and real money, the bar for buying things in-game gets lowered. It is easier to justify yourself buying an action in-game that costs 50 diamonds instead of 2 euros.

Using virtual currencies have also many practical benefits in addition to the game design and psychology related reasons discussed earlier. Using virtual currency for in-game purchases simply make the purchase process easier for people who wish to buy something. If IAPs are straight linked to real money, purchasing things becomes impossible when players don't have access to internet, for example when they are in an area with bad connections or travelling abroad. Although buying virtual currencies offline is not possible either it is still normally possible to spend them without a connection. Virtual currencies also decrease the amount of people who drop during the purchase flow because confirmation pop-ups aren't needed unlike in the case of dealing with real money.

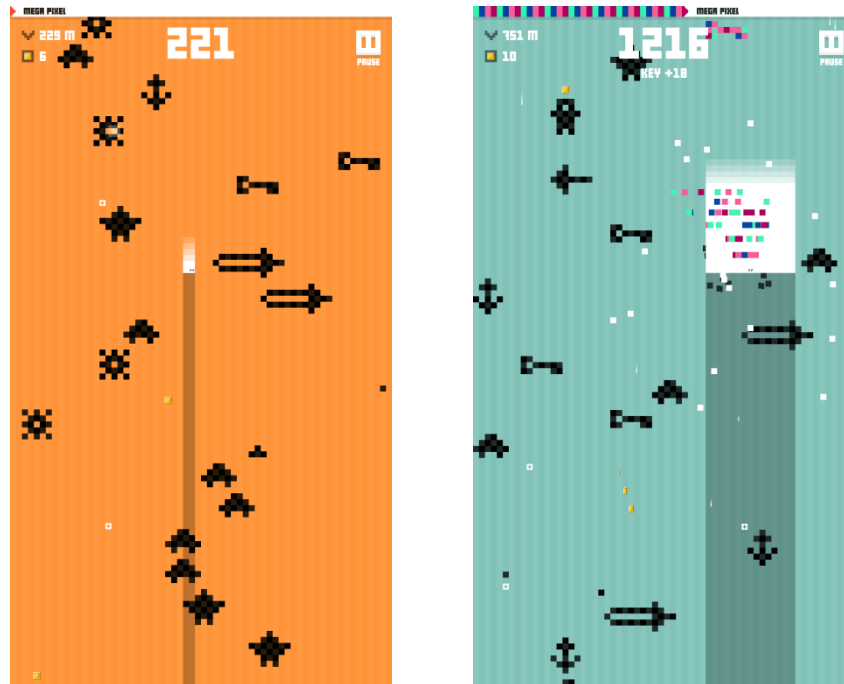
5.2 Mega Dead Pixel

When *Subway Surfers* was an old successful case, *Mega Dead Pixel* was chosen for analysis because it is a fresh example to the same endless arcade game genre. It was developed by a game studio called About Fun and published by a big well-known publisher in mobile Chillingo. It was released only on iOS in October 2013.

Mega Dead Pixel was picked amongst the many other endless arcade games because it has a similar relation to music as *Supersonic*. While the music doesn't affect the gameplay, it is still important part of the theme, creating an immersive atmosphere of the game. The core loop is the same as in other endless games but the gameplay is unique. *Mega Dead Pixel* is also a good example of well implemented metagame that is based on progression and competition for high scores. The progression is implemented with missions, different length reward loops and big amount of unlockables. This means that whether you are doing only one fast game in a queue or having a longer play session in a train, you always have some goals to aim for.

5.2.1 Gameplay

Mega Dead Pixel has a strong retro art style that is made with pixels (picture 9), which targets especially the niche of people who played games back in the day when pixel art was the standard. The game is defined as an infinite faller, but the core loop is the same as in the other endless arcade games. You collect points, avoid obstacles and complete missions. Your pixel character is continually falling down and you can move left or right by pressing the edges of the device. Your goal is to score best possible score by falling next to different shapes which paints them and grants you points. You can also destroy them by smashing through them, which grants you similarly the points but also decreases your character's size and pixels. The game ends when your character hits too many obstacles and doesn't have any pixels left.

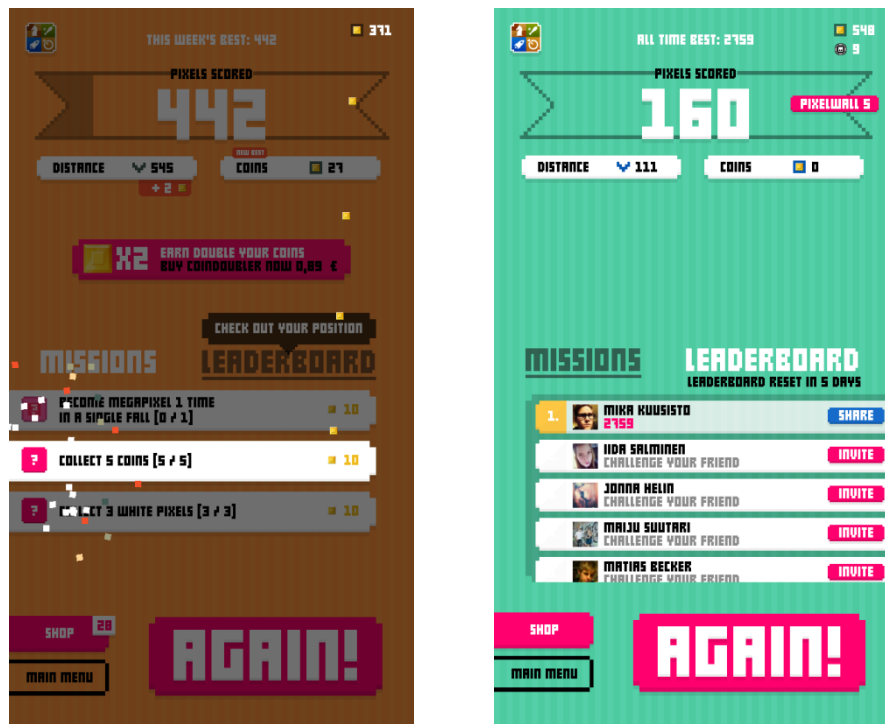


PICTURE 9. Gameplay screenshots and “mega pixel” mode activated on the right

While falling and scoring points by painting the shapes you also try to collect coins which are used for all the unlockable things in the game. Character size is increased by collecting white pixels, which grant your character more size but also increase the falling speed. Doing a good combo puts the character in a “mega pixel” mode (picture 8) where its size and speed increases dramatically until too many shapes are hit and the speed slows down to normal. This creates good phasing and prevents the gameplay from turning too dull.

5.2.2 Missions and progression

There are always three missions available at a time. At the beginning of the game they are simple e.g. die two times or collect 5 coins but they become harder the further player progresses in the game. There are over hundred different missions and majority of them can be completed in quite frequent rate. At the end of one sessions player gets rewarded with coins for all the completed missions (picture 9), which then get replaced with new missions. These missions are great for creating small time span goals that can be completed during a fast play sessions.



PICTURE 10. Result screen showing a completed mission and leaderboard tab

At the same time there is always present a longer time span goal called “pixelwall”. It serves a similar role as player levels in other similar games. You have to reach a certain point limit, which unlocks more shapes and wallpapers for their mobile devices. I think these wallpapers are a good idea because they carry over outside the game and thus create different kind of value.

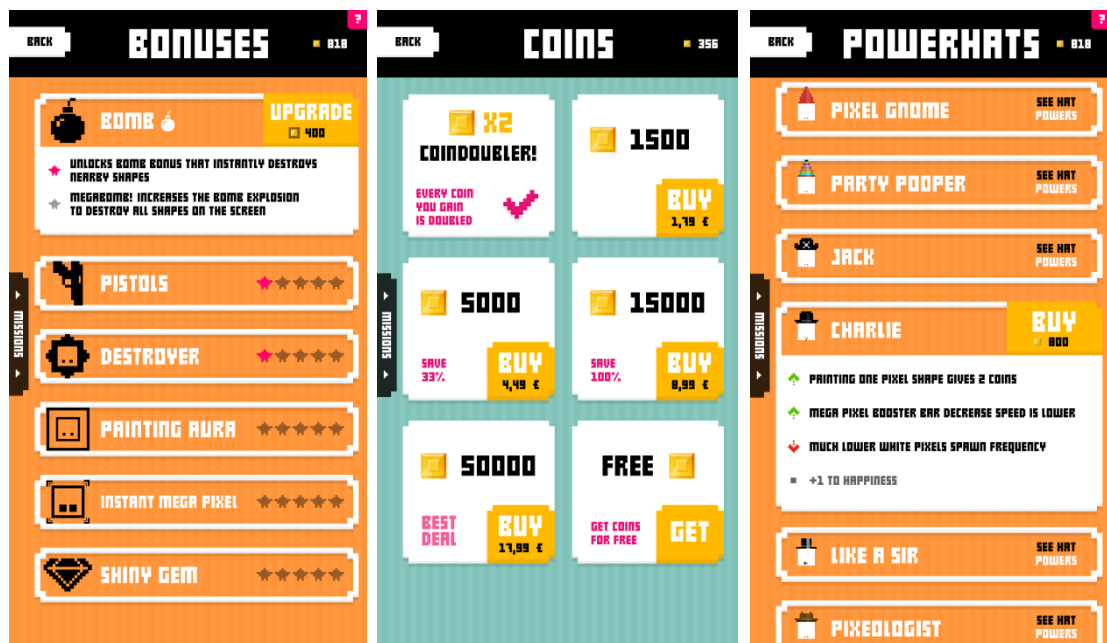
Mega Dead Pixel doesn't have score multipliers but the different shapes that player earns and buys with coins have a similar effect. Bigger shapes grant more points and help to achieve better scores. Collecting different shapes works well as small rewards besides all the other things where coins can be used. Creating the right kind of collection of shapes is also important for competition of high scores because certain shapes are easier to dodge and other shapes give more points. Competing for high scores is important part of *Mega Dead Pixel's* metagame as it normally is in this type of games. Friend data is gathered from Facebook and friends who aren't playing the game can be invited easily (picture 9).

The benefits of high scores were discussed in the earlier chapter about *Subway Surfers* so now I'll just look into the implementation of them. In *Mega Dead Pixel* the leaderboards are always accessible in the result screen from a tab next to the missions (picture 9). The developers clearly value the missions over leaderboards because that tab is al-

ways open at first and the leaderboard tab has to be manually opened. This is a bit questionable as the social aspect of competition with friends is one of the key points for these kinds of games. I would have rather wanted to see both missions and leaderboards at the same time or by default show the leaderboards at first.

5.2.3 Coins and rewards

The game has similar single currency systems as *Subway Surfers*. Coins are collected during the game sessions, they are rewarded from completing missions and they can be bought with real money (picture 10). Missions are the main source for coins and basically coins are constantly being rewarded and they are used for all the unlockable things in the game (picture 10). There is also a pay-to-continue feature that revives player after dying. For this player has to use “megatokens”, that can be only bought with real money. The most popular IAP is “coin doubler” which costs €0.89 and according to its name doubles the coins the player earns from missions and collects in game. Coin doublers often act as the first obvious purchase for players who are willing to spend money in games and it is the best-selling IAP in this game too (Appannie 2013).



PICTURE 11. Bonus, coin and character shop screens

Besides the many different shapes coins can be used for many other things too. There are ten different hats that have different effects on gameplay so they aren't just cosmetic vanity. They change the game speed and difficulty, some suit for new players, some are

best for maximizing coin collection and some are optional for best scores. They give a good feeling of choice for the player who can pick the character that suits their play style the best. Linking gameplay effects to character customization is good way to add variety to the gameplay.

The real coin sink are six different bonuses (picture 10) that have different game changing effects. For example one bonus destroys surrounding shapes and other grants the player ability to shoot for a brief time. Once unlocked the bonuses start spawning randomly through the game. Upgrading the bonuses increases the spawn rates and improves their effectiveness. The same bonus can be upgraded multiple times and overall this makes the feature a good place for true fans to spend their earned and bought coins. Last thing where coins can be spent are new worlds that change the background color and song. It is nothing special but it is a good addition for the basic ascetic customization.

6 IMPROVEMENT PROPOSAL TO SUPERSONIC

Supersonic's core problem is that it was clearly originally designed to be a paid game. Even though the paid version generated majority of the revenue the results were still poor. The game is over couple years old and things have changed a lot during that time. It still lacks the features that are essential for F2P model to work.

Supersonic has a solid core gameplay with innovative idea and mechanics. It proved to attract millions of users but the problem is in keeping the players and turning them into paying customers. There is no metagame and valuable IAPs for true fans to buy and game mechanics don't support retention well enough.

This chapter focuses on giving recommendation to these problems on a high level. I took the standpoint of a product owner, normally the product manager or customer, and described the ideas on a feature level. This means that they are things I would expect to see but how exactly they are implemented is up to a game designer or a user interface designer.

6.1 Limiting the game modes

Supersonic wasn't strictly an endless arcade game but that is what I would turn it into. I argue that the biggest design flaw with *Supersonic* is having the three different game modes. They all have the right idea in some area: classic with the difficulty level, blitz with the boosters and mixtapes with the custom tracks, but as it is the big picture feels disconnected and at the same time this kills the monetization.

I suggest limiting the game mode to a single one that combines the best parts of all these three game modes. The basic idea is like in the classic mode, you continue as long as the song lasts or until you hit an obstacle. There are different boosters that can be bought during the first five seconds of the run. Player unlocks new levels, in others other words new songs with different themes, by completing the current song or after a certain experience level has been reached, so even the weaker players progress too. After player has completed the initial set of songs that the game has unlocks the main endless song set called "Supersonic". When the player was playing single tracks until this

point of the game, this should be seen as an endless set of songs. Own tracks can be also added in and all the songs selected will be mixed together, meaning that after one song ends new one starts playing and the game continues until the player hits a wall.

The key aspect is the right level of difficulty with right amount of frustration mixed in. This blended with competition with friends is what makes the game stick but also to monetize.

6.2 Missions and progression

It is important to have reward loops of different lengths. Something fast that can be completed in a coffee shop queue but also long term goals that players can see in the future and which is why they want to return to the game. It is also important that the progression is indicated somehow. I really liked the implementation of missions in both analyzed games and now I will introduce how I think missions and levels should be done in *Supersonic*.

Point of the missions is to make the core loop more interesting by creating variety to the gameplay and adding constant rewards. With them the game is not just about surviving as long as possible but also getting satisfaction from completing missions, getting meaningful rewards and having clear progression visualized by the level. Missions can create challenges like surviving long enough or beating daily scores. Gameplay can be restricted with missions, for example reach certain point by only turning to one direction or not hitting any points or credits. There should also be also some really simple ones that are just rewarding to complete, for example go through five obstacles in one run or die between the first ten and fifteen seconds of the run.

There would be three missions always available out of a pool of approximately hundred different ones. Completing missions grants soft currency and experience which raises the player's experience level. In the beginning only couple missions are required for leveling up but the amount of experience needed for the next level increases gradually. I liked how *Mega Dead Pixel* constantly had small missions and I suggest *Supersonic* to do that plus add meaningful progressions. Levels increase your score multiplier perma-

nently and certain level limits are required for unlocking content. After leveling up player is also rewarded with a small amount of hard currency.

Player is rewarded with soft currency (credits) after completing missions depending on the mission difficulty. Harder missions give more experience and credits. If player finds some missions too hard they can be skipped using hard currency (cassettes). Doing this would be a good decision if they have a mission they absolutely can't complete, which then slows down their progress because they basically have only two missions they can be finishing. Fourth mission slot can be opened with hard currency (cassettes) worth couple euros to speed up the leveling progress by having more missions available at the same time. There is a level cap after which the score multiplier doesn't raise and the missions only give soft currency.

There would also be daily missions which purpose is to reward player for returning to the game. They are something simple and the player is rewarded with soft currency. The reward increases if the player returns also on the next day and maximum reward is earned after five continuous days.

6.3 Economy and unlockables

I would introduce dual currency system with meaningful and valuable items to buy. Soft currency (credits) is constantly earned by playing but it can also be bought with real money in various price ranges. The amount of credits earned can be doubled with "credit doubler" which purpose is to be an obvious purchase for fans that enjoy the game. Price for that could be €1.79. Hard currency (cassettes) is rewarded only rarely so in practice it has to be bought with real money if you want to access the features and content that it is used for. Also hard currency is sold in various price ranges.

I liked the idea of boosters that *Supersonic* already had in one of its game modes but they would have to be implemented little differently. Boosters can be bought with soft currency and their role is to help players to advance further and work as an infinite well where soft currency can be spent. I would also remove the gear-up screen where they were bought before. The game is hard and players will die often which is why the game needs to be able to be replayed straight from the result screen without any other menus

in between that and getting back to the game. The boosters should be buyable during the first five seconds of gameplay from buttons that are placed on the edges of the screen. The purpose is to make the menu flow seamless by removing useless menu screens.

All the boosters last for one run and their purpose is to make the game easier or help getting better scores. “Score multiplier” adds five multipliers to the total score multiplier. “Shield” absorbs one hit from an obstacle and “super shield” absorbs two. Normally points have to be hit precisely, but with “vacuum” they are collected also from close distances. “Mine immunity” negates the effect score multiplier reset effect from first mine hit and “super mine immunity” from two mines. “Fast forward” skips the first thirty seconds of the level and song and it is meant for skilled players who find the easy start boring.

Supersonic is played from a first person view but I think it misses an excellent possibility for building characteristic and theme, which then could be used for monetization. The game already happens in a quite futuristic setting so I would suggest moving the camera to third perspective and having some kind of space ship or other futuristic vehicle as the game’s character that the player is controlling. What it is exactly is up to the game designer or art director but different kind vehicles could be used in the progression of the game. Different kind of ships could be unlocked after certain levels or bought with soft currency. Special ships could be sold with hard currency.

6.4 Utilizing music

New songs unlock as part of the progression in the game by reaching a certain experience level or finishing the current song. They can also be unlocked by using hard currency. All songs are different by level design and art style. The game’s soundtrack is also used as a reward for hitting certain milestones. For example when the player hits level 10 one of the first songs can be downloaded to the device and listened outside the game.

You can also create your own tracks from your songs in your device but they are now also part of the game’s main game mode. These songs are now also part of the leaderboards. Creating own tracks costs hard currency.

New songs would be also added to the game in continuing updates. One possible idea is to use famous and just about to break artists to produce music for the game and release them in biweekly updates. Music is important part of the game and good music adds to the value of the experience. Even if creating tracks out of your own tracks would be possible, as it is currently, I still claim that the players would appreciate new songs. Most of all players would get excited for the competition for new high scores that comes with the new tracks. These new tracks could be used as weekly competitions for global high scores and as such serve as a good reason for the player to return to the game. Patches with fast cycles of 2-3 weeks would also allow fine tuning the game with fixes and a/b testing various parts of the game.

Money spent on the artists should be also viewed as marketing money because the second benefit for this idea is that the artists would serve as the game's hype machines. Raising stars and already famous artists can have huge loyal fan bases who follow their favorite artists posts in the social media. The deals with the artists should state that they hype the game in their social media channels and recommend their fans to try it. These people who decide to download the game view it differently because they were brought there by the recommendation of their favorite artist and whose songs they especially want to hear and try out in the game. So the initial approach to the game by these players compared to the people who randomly find it from the app store is more positive and permissive.

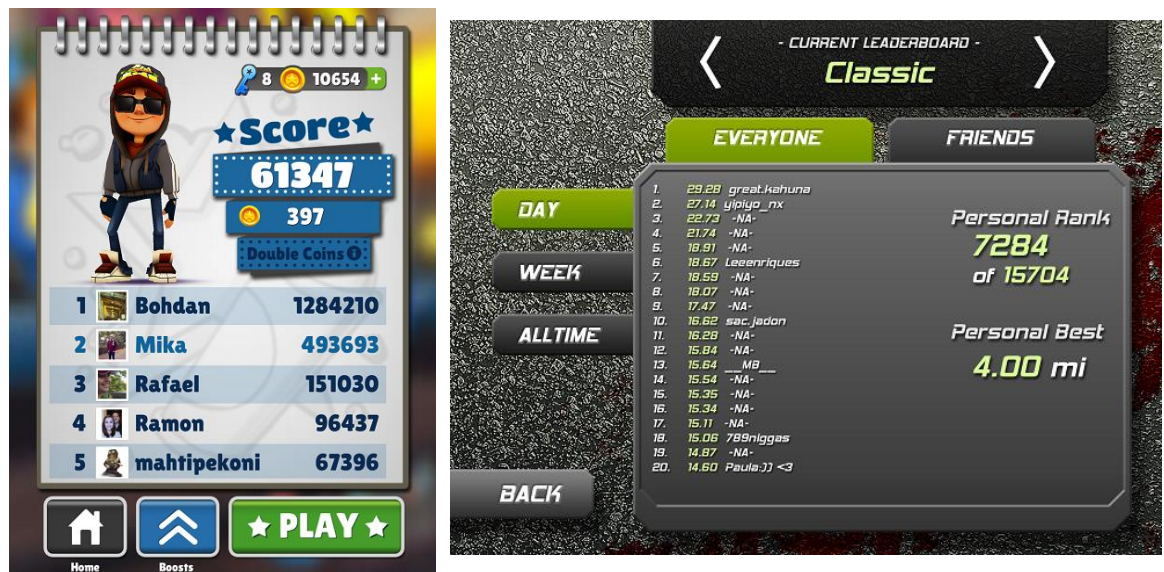
6.5 Leaderboards and result screen

Besides plain competing, high scores are great way to create constancy. It is the feeling that the player has left something behind for others to witness. Leaderboards are currently *Supersonic's* only feature on the metagame level but the implementation is poor. The leaderboards are somewhat there, but they don't utilize the result screen, power of friends and competition between them.

People want to compete with their friends, not only strangers. Facebook integration is a must for this game in my opinion. Furthermore your position in the leaderboards is not shown unless you are in the top 50. Also the game mode mixtapes isn't included in the leaderboards at all.

Result screen is one of the most important states when player decides to continue playing or quit so it should be interesting and informative. The result screen should show the score of the players in relation to his/her friends because it drives the competition and also gives a clear feedback of the player's progress. Nothing hooks the players better for a one more try, than creating a feeling that you are close to passing your friends scores or showing how their friends have just one-upped their own scores. I would implement the result screen similarly to *Subway Surfers* (picture 11) but having two tabs: first has friend leaderboards and second has daily leaderboards. There should also be buttons that lead to the shop and to the full leaderboards, which is normally accessed from the main menu. Missions would be presented at the same time as well.

The leaderboards of *Supersonic* have the right idea with the weekly and all-time scores but like in the new result screen, I would also add the daily situation in there like *Zombie Highway* (by Auxbrain) does it (picture 11). Friends should be part of the normal leaderboards too. Where *Supersonic* fails with the leaderboards is that they don't show the big picture. They only show the top 50 scores but don't show the player's own score at all and the relation of the player's to his/her friends or the global statistics. *Subway Surfers* and *Zombie Highway* in the picture 11 show a good execution of these ideas and compilation of these should be implemented in *Supersonic*.



PICUTRE 12: How *Subway Surfers* and *Zombie Highway* utilize score screen and leaderboards

7 DISCUSSION

The purpose of this thesis was to explore the topic of monetization in mobile games. The research problem was that how Kuuasema's mobile game *Supersonic* could be more profitable and the goal was to make an improvement proposal for it. I think it succeeded well with its goals but also ended up being a useful paper to read for anybody interested in F2P game development.

The theory section gave a brief description on the free-to-play business. Game design and monetization in particular are complex issues and I acknowledged beforehand that every game is unique and simply copying what other games do isn't necessary the solution. The small pool analyzed games could be criticized but even with only two reference games I faced a dilemma of not wanting to repeat analysis on the same kind of features from both games. The analysis still pointed out many clear weaknesses in *Supersonic* with the help of the analyzed games.

The fundamental problem with *Supersonic* clearly was that it wasn't originally designed to be a F2P game but the improvement proposal offered solutions to fixing this. The point of this thesis wasn't to write a precise game design document but instead give direction where the development should be headed so game designers could continue with the actual implementation. I think it succeeded well in that and gave the customer valuable evaluation on their game and how it could be improved and in my opinion the best way to proceed would be releasing a totally new version of the game with the new features discussed in this thesis. There are many other areas too where this thesis didn't touch but how the game could be improved and further planning and research should be done before continuing with the development.

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