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The Relation Between Game Fairness and Drop-Out Factors in Massive Multiplayer Online Games

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Abstract

A large number of people around the world play free-to-play Massive Multiplayer Online Games in a regular basis. The evolution of technology, such as the improved quality of mobile apps, makes this kind of games available everywhere at any time. Since they required a great investment in the early phases of development, Product Managers deploy several in-game premium features in-game which can be purchased by players willing to get some advantages. When the gap of advantage between premium and non-premium players is quite noticeable it leads to lack of game fairness. Thus, players may leave the game. The purpose of this thesis is to understand which drop-out factors that can be controlled by Product Managers are significant and what's the importance of game fairness when compared with other drop-out factors. A survey was spread on English-speaking communities of a Massive Multiplayer Online Game. The results have shown that 53.9% of the variation in drop-out is explained by the significant predictors (latency/performance issues, in-game features, community, service/support team and game fairness). Latency/performance issues and game fairness are the most relevant drop-out factors. By focusing its attention on drop-out factors that can be controlled by Product Manager, this research aims to help those entities taking great decisions in the development of free-to-play Massive Multiplayer Online Games.

Key words: drop-out factors, F2P MMOGs, game fairness

Resumo

Um grande número de pessoas por todo o mundo joga Massive Multiplayer Online Games *(possível tradução: Jogos Online de Múltiplos Jogadores)* gratuitos. A evolução da tecnologia, tal como a qualidade melhorada das aplicações móveis, torna este tipo de jogos disponível em todo o lado a qualquer momento. Uma vez que requerem um grande investimento nas fases iniciais de desenvolvimento, os Gestores de Produto implementam várias funcionalidades de jogo pagas que podem ser adquiridas por jogadores que querem obter algumas vantagens. Quando o hiato entre a vantagem de jogadores premium e a de jogadores não-premium é bastante percetível tal conduz à falta de equidade/justiça no jogo. Logo, os jogadores podem abandonar o jogo. O objetivo desta tese é perceber que fatores que podem ser controlados pelos Gestores de Produto são significativos e qual a importância da justiça no jogo quando comparada com outros fatores de abandono. Um questionário foi divulgado em comunidades de expressão inglesa de um Massive Multiplayer Online Game gratuito. Os resultados mostram que 53.9% da variação no abandono deste tipo de jogos é explicada pelos fatores significativos (latência/problemas de desempenho, funcionalidades de jogo, comunidade, serviço/equipa de suporte e justiça no jogo). Latência/problemas de desempenho e justiça no jogo são os fatores de abandono mais relevantes. Ao focar a sua atenção nos fatores de abandono que podem ser controlados pelos Gestores de Produto, esta pesquisa pretende ajudar essas entidades a tomar boas decisões no desenvolvimento de Massive Multiplayer Online Games gratuitos.

Palavras-chave: fatores de abandono, F2P MMOGs, justiça no jogo

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List of Abbreviations

CRM - Customer Relationship Management

F2P – Free-to-Play

MMO or MMOG- Massive Multiplayer Online Game

MMOFPS - Massive Multiplayer Online First Person Shooter

MMORPG - Massive Multiplayer Online Role-Playing Game

MMORTS - Massive Multiplayer Online Real Time Strategy

MOBA - Multiplayer Online Battle Arena

P2P – Pay-to-play

PM – Product Manager

PvE - Player versus Environment

PvP - Player versus Player

1 Introduction

In the first chapter, the reader will get a global overview of the theme problematic and relevancy, which topics will be focused and the goals of this study.

1.1 Research Gap and Relevancy

A significant number of people around the world play free-to-play MMOGs (Massive Multiplayer Online Games) in a regular basis and with the evolution of technology and new platforms arising, it tends to grow (source: SUPERDATA REASERCH INC. – MMO market report 2015). This genre of games is becoming even popular in countries as China (Warkentin *et al.*, 2007) or Malaysia (Loh, 2013). However, surprisingly, the subjects mentioned in the research questions were not sufficiently studied regarding the online gaming industry. No studies were found concerning the relation between the lack of game fairness and (other) drop-out factors. The papers found on this matter only develop the concept of game fairness and refer that it may have a relation with players quitting games (Hamari, 2015; Lin and Sun, 2007 and 2011; Paavilainen *et al.*, 2013). So, the intention of this project is to approach them in detail.

Furthering the studies conducted on these issues, which regard mostly the motivation for a player to play a MMOG, this project is expected to answer to some "unnoticed" aspects on the development of MMOGs, such as drop-out factors related to those games that can be somehow managed by companies and how Product Managers (PMs) could prevent those rates to be significant. By understanding what impels players to leave a MMO, Product Managers will be able to manage their efforts on retention more effectively.

In that sense, game developers and publishers' companies with an equilibrium between shareholders and players' interests may forecast a decrease in the drop-out rates, which means that more players will be investing on them and the results of the companies will be improved (Freeman *et al.*, 2004; Holmlund and Kock, 1996; Kinnunen *et al.*, 2014; Kristian and Panjaitan, 2014; Schiffman and Kanuk, 2007). In consequence, players will be much more engaged in the online communities when feeling that their feedback really counts towards the development of the game, which means more satisfaction. Those kinds of games can be, in that moment, creative and mindful hobbies and the communities will be certainly places to pro-active discussions.

1.2 Research Problem

In the free-to-play MMOGs industry, Product Managers' focus on shareholders aim for short-term results/profitability is churning players and putting apart their interests of game fairness and free-to-play model.

Pressured for results by shareholders, PMs find in the addition of so-called premium features the primary solution to finance all the resources used to develop such category of games. However, when pushing it too hard – that is, having lots of premium features in important game mechanisms or creating premium features that grants huge advantages for those who decide to invest on the game (premium players) – leads to a lack of game fairness in the perspective of non-premium players. Those players may eventually stop playing the game and so this sense of game fairness may increase the drop-out rates, according to Hamari (2015), Lin and Sun (2007, 2011) and Paavilainen *et al.* (2013).

Despite these facts, and according to the same authors, there seems to be no tendency to find an equilibrium and so interests of shareholders may conflict with users' interests.

1.3 Research Questions/Objectives

This research project aims to establish a relation between Product Managers decisions and the motives behind players quitting free-to-play MMOGs and how the advantage gap between premium and non-premium affects the drop-out rates. Thus, this investigation will focus on the following core questions:

- What are the main drop-out factors related to MMOGs, besides the ones that cannot be controlled?
- Are the drop-out factors common to premium and non-premium players?
- What's the level of importance of game fairness (gap between premium and non-premium players) when compared to (other) drop-out factors?

2 Industry Overview

This chapter explains to the reader what are MMOGs and what's the tendency regarding business models. It sets the pace to the first topic of next chapter which allows full understanding of the research problematic.

2.1 MMOGs Definition and Categories

MMOGs (Massive Multiplayer Online Games) are videogames played online over the internet where a large quantity of individuals can interact simultaneously in persistent worlds – a persistent world is an online game world that exists regardless of whether players are logged in the game or not and as it evolves the changes made in players accounts are saved up to some extend – through their self-created characters/avatars, with other players' avatars as well as with the gaming software – defined by Steinkuehler (2004) as «the designed environment of the game and the computer-controlled characters within it» (Achterbosch *et al.*, 2008; Suárez *et al.*, 2013).

Within MMOGs, there are several game categories. From those, MMORPGs, MMORTS and MMOFPS are the most known initials (Ghuman and Griffiths, 2012). MMORPGs stand for Massive Multiplayer Online Role-Playing Games (e.g. World of Warcraft, Ultima Online, etc), which represent the most common type of MMOGs and focus on character development, player versus player (PvP) and player versus environment (PvE) combat, existence of communities within the game (tribes, guilds, clans, etc.) and item collection; MMORTS means Massive Multiplayer Online Real Time Strategy (e.g. Tribal Wars, Clash of Clans, etc.) and focus on strategy and tactics, so that the progress of a single player is very dependable on the game styles and relationship with others; MMOFPS is the initial for Massive Multiplayer Online First Person Shooter (e.g. Counterstrike, Project Blackout, etc.) and the main goal is to shoot other players within 3D maps (Achterbosch *et al.*, 2008; Rice, 2006). One other genre that is gaining more and more fans over the years is MOBA (Multiplayer Online Battle Arena), which may explain why League of Legends deposed World of Warcraft in terms of revenues in 2014.

2.2 Industry Growth and Revenue Models Shift (from P2P to F2P)

Studies were made to understand the evolution of business/revenue models in the MMOGs industry and they verified that we are experiencing a shift (Hamari, 2015; Hamari and Lehdonvirta, 2010). In the beginning, subscription-based (or pay-to-play – P2P) MMOGs were the most popular and game developers would collect their earning by charging players on monthly fees. Yet World of Warcraft observed an increase on its subscriptions numbers, the games that thrive through a subscription revenue model are declining and its tendency is being pushed by free-to-play (F2P) MMOGs – these free MMOGs way of making money lies basically on the inclusion of premium features in-game, which players can use by purchasing virtual game currency, and advertising (Söderlund *et al.*, 2005). The forecasts for 2017 provided by SUPERDATA RESEARCH INC. shows that free-to-play MMOGs will generate $11.1 billion, while the pay-to-play continue its fall to $1.7 billion.

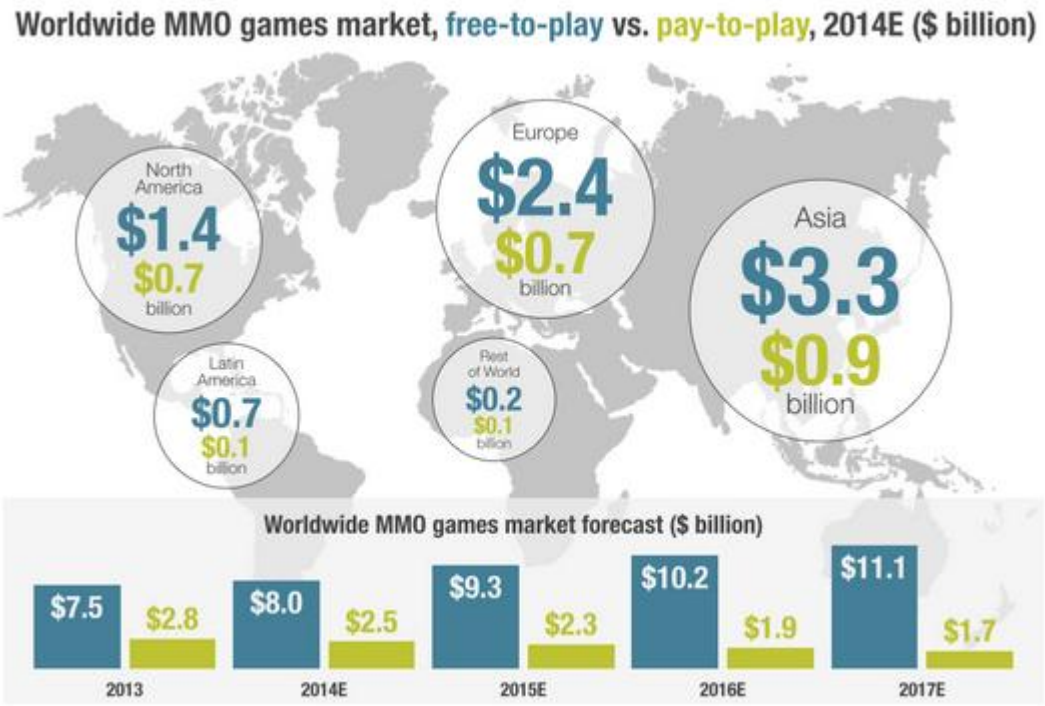

Figure 1 – Generated revenues (free-to-play vs. pay-to-play MMOGs).

Source: SUPERDATA RESEARCH INC. – MMO market report 2015

3 Literature Review

The present chapter contains the research developed for several authors regarding F2P MMOGs and somehow related to drop-out factors, in order to construct a solid conceptual framework.
In the section "Game Fairness", the reader will find the complete reasoning why the gap between premium and non-premium players may be a drop-out factor.
The section "Stakeholders Theory and Customer Orientation" consists on defining those concepts and set the pace to the section "Customer Relationship Management", which explains why the service provided by support teams in F2P MMOGs is so important.
The section "The Player Side" gives to the reader a player characterization. Among other aspects, players assign to high latency the title of plague.
In the section "Motivation to Play MMOGs", the motivation elements to play MMOGs are enumerated and the reader gets to know that the line between engagement and addiction is very thin.
The section "Addiction Factors on MMOGs" specifies several components of F2P MMOGs due to which players get addicted and states that some drop-out factors – community issues, in-game features and so on – tend to be associated with addition.

3.1 Game Fairness

Despite being a billion dollar industry, a successful MMOG requires a huge initial investment and continuous expenditures to maintain the game running. These facts influence obviously the decisions of those responsible for the product – Product Managers. Thus, to make the game sustainable PMs must be concerned about the game play longevity, since a MMOG is developed to be played through the longest period of time possible, and the economic sustainability, given that the business must generate revenues to finance the initial investment and support the running costs, maximizing the revenues while minimizing costs (Chambers *et al.,* 2010; Hamari, 2015).

These running costs include the distribution of content and game servers (usually to maintain a MMOG the game developers make updates regularly, which include features rebalancing, new features creation and bug fixes), service infrastructures and supporters to provide in-game support and keep game communities alive (customer service platforms and those who manage them are expensive) and marketing costs in order to attract new customers and retain players. That's why Alves and Roque (2007) state that «every MMOG requires a steady and continuous flow of income to keep it running, since the cost structure also involves a continuous flow of, usually proportional, maintenance costs. That income comes from players that are actually playing and paying, and therefore, a MMOG needs a constant and large population or number of players to grant its survival.». Hamari (2015) also agrees with it.

So, pressured by shareholders, who desire short-term results, PMs' primary solution to finance all the resources spent on free-to-play MMOGs is the addition of so-called premium features. However, pushing the need to finance the game to the limit by adding more and more premium features in core game mechanisms or creating premium features that grants huge advantages for those who decide to invest on the game (paying players) may break the players' vision of a fair game (Hamari, 2015; Lin and Sun, 2007 and 2011; Paavilainen *et al.*, 2013).

Although the majority of players seem to agree upon a free-to-play MMOG need to earn money to survive, the game must still possess certain elements of fun and fairness, otherwise players will switch in mass to other games they consider having these characteristics. In fact, some players argue publicly in community forums that those who want to participate in the whole experience of a F2P MMOG will have to spend more money on in-game currency than they would on P2P games and thus gain plenty advantage against non-premium players (Lin and Sun, 2007, 2011).

The authors referred above consider that in P2P games players are all equal, whereas in F2P games players are divided on premium and non-premium players. That's where the unfair phenomenon of "one game, two experiences" arises. Some studies refer that free game play is heavily influenced by those who spend money, creating inequality. Thus, the last authors mentioned believe that although the "balance" idea is vague and dependent on the context, the players' sense of fairness is imposing a balance in the games – meaning that «all player types should have equal opportunity to survive in and enjoy all game worlds.» (Lin and Sun, 2011). This means that PMs must find equilibrium between the shareholders and players interests.

3.2 Stakeholders Theory and Customer Orientation

In competitive markets, such as the online gaming industry, successful companies are the ones that best meet the needs of customers and find an equilibrium between long and short-term goals, aligning the interests of several stakeholders (Freeman *et al.*, 2004) – Freeman (1984) defines stakeholders as «any group or individual who can affect or is affected by the achievements of the organization's objective».

As stated by Kinnunen *et al.* (2014), «(...) successful product development usually requires the interaction with several stakeholders, both internal and external. (...) To achieve product success, it is essential to understand both the objectives of stakeholders and the means through which their interest can affect the design and development.». However, each firma has always a wide range of stakeholders, which means that some stakeholders have more salience than others in product development. Since Product Managers have limited time and resources, they must determine stakeholders' salience and manage stakeholders based on it (Olsen *et al.*, 2008). Besides that, Hillman and Keim (2001) found that stakeholder management is not only positively associated with shareholder value creation, but also leads to improved shareholder value creation – in this study shareholder value is operationalized as Market-Value Added (MVA = market value – capital).

Many authors agree that the most salient stakeholder should be the customer (Kinnunen *et al.*, 2014; Majava *et al.*, 2014), since the market is composed by this entity. Actually, according to Jobber and Ellis-Chadwick (2012), meet the objectives of stakeholders is achieved by satisfying customers. From those opinions a new concept arrives – customer orientation. Customer-oriented organizations set as a top priority the customer needs and satisfaction, thus believing that the firma must have a dynamic interaction with the customer (Drucker, 2012).

3.3 Customer Relationship Management

In order to have a dynamic interaction with the customers and collecting benefits from it, companies must apply a specific business strategy supported by technologies and systems.

Customer Relationship Management (CRM) is a business strategy which tends to grant the maintenance of profitable long-term business relationships with customers (Evan and Laskin, 1994; Wongsansukcharoen *et al.*, 2013). This customer-oriented management philosophy brings higher profitability, customer loyalty and brand identification (Holmlund and Kock, 1996; Kristian and Panjaitan, 2014; Schiffman and Kanuk, 2007).

One important element of online gaming industry included on CRM is customer care. As Piskorski (2011) pointed out, a successful community strategy is the one which is able to help establish not only the relationship between customer and company but also the

relationship between customers and products or services. Customer care in this industry is done generally through specific platforms (external forums, support systems, etc.), that players are able to use to provide feedback, report technical problems, report inappropriate behaviour occurring in-game, ask questions and submit complaints – Uusitalo et *al.* (2008) argue that «customer complaints can be a valuable and inexpensive source of information for identifying systematic errors and enabling customer-focused process improvement», since this feedback «provides a more reliable picture of the customer's true opinion». All those issues are handled by support/moderation teams. A good service in this level is imperative as it is an important and large part of the communication that a company performs with its customers. It becomes even more vital and necessary when talking about virtual/online communities.

With such a perspective in mind, PMs must be aware of players' behaviours and feedback, making an effort to address their needs and trying to prevent the existence of high drop-out rates.

3.4 The Player Side

According to Chambers *et al.* (2010), to keep players satisfied, which is an essential aspect to develop a successful game, PMs must understand players behaviour and how to addresses their needs.

Those authors' studies show the following characteristics:

- Players are impatient – There is a noteworthy degree of impatience to busy game servers – high latency – as it influences the game performance and consequently the playing experience and the user satisfaction (Yahyavi and Kemme, 2013);

- Player churn is considerable and increases over time – The ability to retain and attract new players decreases over time, mainly because players lose interest in the game due to power imbalance;

- Updates slightly impact player growth and gameplay – Games are often updated to provide new content to the players and keep them interested. Although in an ideal world these updates would impact player retention, those are not the conclusions taken on the article mentioned above;

- Players reveal when they lose interest – Players play less than their average when

they're about to leave the game (they log in less regularly and each playing session is shorter than usual.

Achterbosch *et al.* state that the in-game graphics and effects, a large world to explore, socialization and PvP combat are the features that players like the most. In the other side of the balance, exploiting/cheating, running out of game content, in-game griefing and high latency are considered as the worst plagues in MMOGs.

Anderson (2009) observes that the four major problems seem to be lack of clearly defined goals, the amount of time that the game demands for the player to be affective in the game server, interference with the gamers' personal life and too complex and/or oversized game server.

3.5 Motivation to Play MMOGs

To better understand why players access to their game accounts regularly, we must look at their motivation factors and which elements are responsible for their engagement in a MMO.

Thus, according to Yee (2006), those elements are divided in the following three components:

- Achievement component – This component includes the desire to have a quick progress and accumulate in-game items that give to the player as much power as possible; the interest in understanding the system and features that compose the game in order to get a character performance optimized; and the desire to compete with other players.
- Social component – This component includes the interest in helping and chatting with others; the desire to create relationships and bonds with other players; and the satisfaction deriving from teamwork.
- Immersion component – This component includes the satisfaction of discover game aspects that other players don't know about; the interaction with other players having created a character with a background story (role-play); the customization of the character; and the possibility to use the virtual environment to disconnect from the real life problems during some moments.

Using the components above and two more components (relaxing and escaping), Dauriat *et al.* (2011) researched on the importance of 14 items. Figure 2 shows those items.

What importance do you give to the following factors?	
1	Entertainment
2	Escaping from real world
3	Passing time
4	Meeting new people
5	Relaxing
6	Source of adrenalin
7	Being a member of a top guild/clan
8	Fame and recognition
9	Competitiveness
10	Communication tools outside the game
11	Chat with other players
12	Exploring and discovering the world
13	Avatar style and aspect
14	Having responsibilities within the guild/clan

Figure 2 – Motivation items. Adapted from Dauriat *et al.* (2011) study.

From those items, «being a member of a top guild», «fame and recognition from other players», «competitiveness in the game» and «having responsibilities within the group» was loaded on the achievement component; «the game as a means of meeting new people», «communication tools outside the game» and «chat with other players» fits the socializing component; «the game as a means of entertainment», «exploration and discovering the world» and «style and aspect of the avatar» was loaded on the immersion component; the relaxing component includes «the game as a means of relaxing» and «the as a means of entertainment»; «the game as a means of escaping the real world » and «the game as a means of passing time» fits the escaping component.

These several components may predict game addiction as suggested in studies conducted by Caplan *et al.* (2009) and Dauriat *et al.* (2011). Kuss *et al.* state that «there is a thin line between high engagement (...) and addiction», but those concepts have distinct indicators. An engaged player pursues game enjoyment while an addicted player is

compelled by withdrawal symptoms to keep playing in order to alleviate those symptoms (Charlton and Danforth, 2007).

3.6 Addiction Factors on MMOGs

Beranuy *et al.* (2013), Griffiths (2008) and Lee *et al.* (2015) argue that there are core components a player need to experience to get addicted to a video game. Those are salience – occurs when playing dominates a person's thinking, feelings and behaviour and becomes the most important activity in his or her life –, mood modification – when the players' game experience is a way of dealing or escaping from other areas on their life –, tolerance – if a player increase the amount of time in the game due to mood modification effects, it leads to tolerance –, withdrawal symptoms – feeling states or physical effects that players experience when they are not able to play –, conflict – occurs when playing too much time starts to interfere with players' lives – and relapse – happens if, when trying to change behaviour and reduce playing time, the previous behaviour is quickly restored.

According to Griffiths *et al.* (2012), Hull *et al.* (2013) and King *et al.* (2010), some features that MMOGs possess rise the probability of experiencing the above mentioned addiction indicators. Amongst them, the social features (in-game voice and text chat, existence of guilds/clans, score lists, forums and strategy guides) have the most significant impact.

Beranuy *et al.* (2013) and Smahel *et al.* (2008) pointed out that players' identification with their in-game character may stimulate an addictive use of video games.

Moreover, Hsu et al. (2009) found out five factors that have high probability of causing addiction – curiosity of interacting with the game environment and making new discoveries on game features; reward related activities (King *et al.*, 2010, state the same); belonging to a community; obligation towards a guild/clan/community; and role-play. Figure 3 summarizes it.

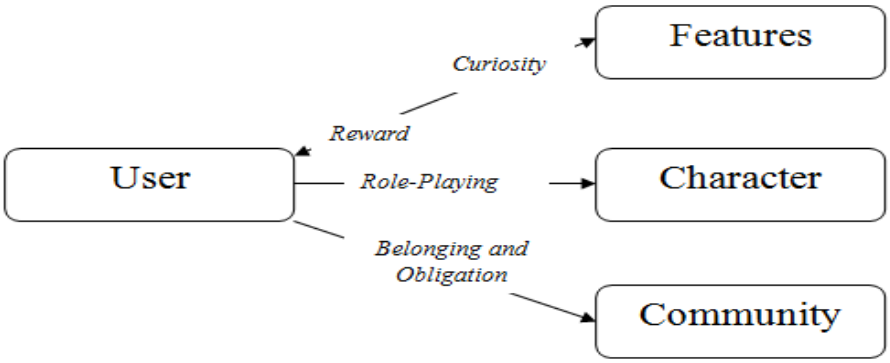

Figure 3 – Addiction-causing mechanisms in MMOGs. Adapted from Hsu *et al.* (2009).

Lee *et al.* (2007) state that «Multiple factors influence gamers to quit playing MMORPGs, and those factors tend to reflect the reasons why gamers became addicted to those MMORPGs.». Accordingly to these authors the drop-out factors can be divided in three categories:

- Immersion in a virtual environment – those factors are tied to the effort required to reach goals without recurring to premium currency, changes in-game features players do not like, or a lack of excitement or pleasure from repetitive playing due to games not being updated often.
- Social networks – one of the common features of MMOGs are the existence of guilds/alliances. «After accumulating many good memories with other gamers, tight bonds within a social network give some gamers a sense of belonging and responsibility that they don't feel in their offline lives. But there can be another side to this sense of belonging as it becomes a social burden.» When there are problems with guild members, the guild often gets fractionated and many players may leave the game as they lost that bond.
- Gameplay is situated in real-life social contexts – Gamers that get addicted and play for many hours may get pressured by their family and peers who disapproved it to stop playing.

This research intends to go beyond that and collect elements that can be associated to the game itself and lead to players quitting games and if they are the same for premium and non-premium players – in that sense, there's no better way than approach players and ask them which factors would result in dropping out F2P MMOGs.

4 Conceptual Framework

In the third chapter, some elements previously studied by several authors were considered to be drop-out factors. A drop-out factor is defined, in the present study, as the reason why players quit F2P MMOGs. The present research is only interested in the factors that PMs can somehow control.

Game Fairness – The gap between premium and non-premium players was pointed out by Hamari (2015), Lin and Sun (2007 and 2011) and Paavilainen *et al.* (2013) as having a relation with player's quitting MMOGs.

H1: Lack of game fairness has a positive relation with players quitting F2P MMOGs.

Latency/Performance Issues - Delay between ordering an action and its execution. Chambers *et al.* (2010) and Yahyavi and Kemme (2013) found that players stop playing MMOGs due to high latency and performance issues.

H2: High latency/performance issue has a positive relation with players quitting F2P MMOGs

Service/Support Team - Responsible for collecting feedback, report technical errors, answer to player's questions and submit complaints (Uusitalo et *al.*, 2008). The customer care staff helps establish a relation between companies and players as mentioned by Piskorski (2011), thus a bad service influences the drop-out rates.

H3: A poor service/support team has a positive relation with players quitting F2P MMOGs.

In-Game Features - Functions and objects that are part of the game environment. When players don't like some features of a MMOG, they stop playing it, according to Anderson (2009) and Lee *et al.* (2007).

H4: Players' dissatisfaction with in-game features has a positive relation with players quitting F2P MMOGs.

Community - People with common interests that assemble together and interact with

each other. Those interactions are very important in terms of addiction and, when some negative situations occur while being part of a community, may be related with players quitting MMOGs (Anderson, 2009; Chou, 2013; Lee *et al.*, 2007).

H5: Players' negative perception on the community has a positive relation with players quitting F2P MMOGs.

In this research, the importance of Game Fairness when compared with the other drop-out factors is also intended to be studied. Thus, player's perception on the following sentences is required:

S1: Game fairness and latency are equally important when deciding to leave F2P MMOGs.

S2: Having a great support team is more important than the game's fairness.

S3: There's no sense on deploying new features that will make F2P MMOGs significantly unfair.

S4: Players would continue to play unfair F2P MMOGs, as long as it has an engaged community.

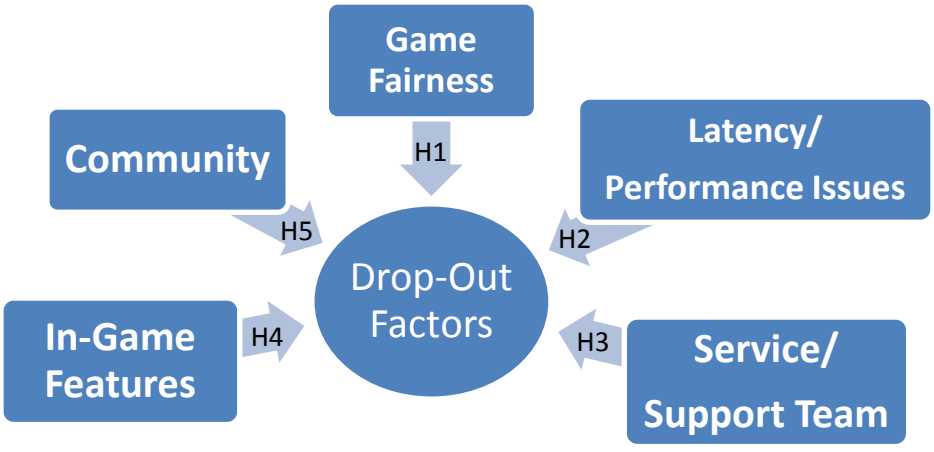

Figure 4 – Diagram of the conceptual framework.

5 Research Methodology

In order to achieve the study objectives, a survey was designed. Online surveys are probably the best way to reach the maximum users in a short period of time and the sense of anonymity tends to impel honest answers.
Taking the data collected, the conceptual model constructs were target of a validity and reliability analysis.

5.1 Survey Design

The survey includes demographic questions – age, gender and country of origin –, general questions regarding F2P MMOGs – which game(s) the respondents play/played, money spent on average per month and reasons why they quit the games – and several questions related with the conceptual model constructs – latency/performance issues, in-game features, community, service/support team and game fairness – in order to test the research hypothesis. The questions were adapted from some authors' conclusions and their research surveys. More information about this matter can be found in table 2.

The first version of the survey was revised and answered by a test group composed by 20 people from company XPTO (fictitious name, since the company required anonymity). After some suggestions and discussion, the final version was implemented (see appendix A).

The survey recipients are F2P MMOGs players which speak English, thus it was spread on the English-based communities of a specific MMORTS from company XPTO.

5.2 Sample Profile

The survey was active for one week and got a total of 96 valid responses. The respondents are from several countries, including United Kingdom, United States, Germany, Portugal, Australia, the Netherlands and so on.

Five respondents are under 18 years, the age range with higher frequency (38) is 18-29 years and 87,5% of the sample are male, as showed in the table below.

Table 1 – Respondents demographics.

Age	#	%
Under 18	5	5.2
18 - 29	38	39.6
30 - 39	15	15.6
40 - 49	18	18.8
50 - 59	10	10.4
60 or older	10	10.4
Total	96	100

Gender	#	%
Male	84	87.5
Female	12	12.5
Total	96	100

Country	#	%
United Kingdom	15	15.6
United States	14	14.6
Germany	7	7.3
Portugal	7	7.3
Australia	6	6.3
The Netherlands	5	5.2
Canada	3	3.1
Greece	3	3.1
Sweden	3	3.1
Other	33	34.4
Total	96	100

5.3 Validity and Reliability Analysis

The several items (see table 2) from the five constructs of this study – latency/performance issues, in-game features, community, service/support team and game fairness – were subject to various tests in order to assess their validity and reliability.

The validity was tested by performing a factor analysis on principal component with varimax rotation. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value obtained was 0.735 and the Bartlett's test was significant (p=0.000). According to Tabachnick and Fidell (2007), a KMO value higher than 0.5 is considered suitable and Bartlett's test must be significant ($p<0.05$). Moreover, the components extracted in the factor analysis explain 68.2% of the total variance.

The construct reliability was assessed by getting the Cronbach α (the values ranged from 0.718 to 0.848), which threshold suggested by Hair *et al*.(2004) and Sharma (1996) is 0.7.

The details from every test mentioned in this section are given in table 3.

Table 2 – Items for each construct and measurement scale.

Construct *Item tag*	**Item**	**Scale**
Latency/Performance Issues	Adapted from Achterbosch *et al.* (2008) survey and conclusions and Yahyavi and Kemme (2013) conclusions.	5-point Likert scale ranging from (1) Strongly disagree to (5) Strongly agree
L1	I get impatient for a game's high latency and therefore stop playing.	
L2	I would quit a game with lots of performance issues.	
L3	Latency is an important element that affects my continuation on the game.	
L4	Latency is part of the game, but fixing the problems deriving from it is essential for my staying in a game.	
L5	When the game developers show no concern to fix performance issues, I lose interest in the game.	
In-game Features	Adapted from Achterbosch *et al.* (2008) survey and conclusions.	
F1	A game needs to have intuitive features. Otherwise, I stop playing.	
F2	If the responsible people for a game refuse to add an important feature, I don't waste my time on the game.	
F3	If an essential feature takes lots of time to be implemented, I'll not be there when it happens.	
F4	When a feature is promised, I expect to get it on time or I would stop playing.	
F5	Too complex features would make me leave the game.	
Community	Adapted from Dauriat *et al.* (2011) and Chang *et al.* (2008) surveys.	
C1	When my in-game friends leave the game, I stop playing it.	
C2	When I feel that I don't belong to the community, I rather stop playing.	
C3	A secure and fun environment on the community is essential for my continuation on the game.	
C4	My relationship with my guild members affect my willingness to continue to play the game.	
C5	Community is an important element that affects my continuation in the game.	
Service/Support Team	Adapted from Chou (2013).	
ST1	Having a team that shows lack of knowledge on the game, makes me leave the game.	
ST2	If the support team is not pleasant, I just leave the game.	
ST3	When there're proves of bad procedures on the support team, I stop playing the game.	
ST4	Lack of professionalism by the support team, makes me stop playing the game.	
ST5	The service provided by the support team is an important element that affects my continuation in the game.	
Game Fairness	Adapted from Lin and Sun (2007 and 2011) and Paavilainen *et al.* (2013) conclusions.	
GF1	When features provide huge advantages for those who spend money, I would stop playing.	
GF2	If I feel that the game is providing unfair advantages, I would leave it.	
GF3	If the game is unfair and people in charge show no concern in solving it, I would leave the game.	
GF4	If the game doesn't provide a fair competition, I would leave it.	
GF5	When I cannot compete with premium players without spending money, I lose interest on the game.	
GF6	Game fairness is an important element that affects my continuation in the game.	

Table 3 – Results of validity tests - Kaiser-Meyer-Olkin measure of sampling adequacy (KMO), Bartlett's test and total variance explained (TVE) – and reliability test – Cronbach α.

Construct	KMO	Bartlett	TVE	Cronbach α
Latency/Performance Issues	0.735 (>0.500)	Chi-square 1176.840 Sig. 0.000 (<0.05)	68.179%	0.718
In-game Features				0.764
Community				0.765
Service/Support Team				0.844
Game Fairness				0.848

6 Results

Several statistical tests were performed using SPSS 23 and every result is presented in this chapter. The results are also analysed splitting several important questions by age, gender and money spent on average by month in F2P MMOGs.

6.1 General results and hypothesis analysis

From 96 players, 69.8% of them state having already quit a F2P MMOG. Several reasons were appointed, from which personal issues and game fairness (gap between premium and non-premium players) were predominant.

When asked directly if they have quit a F2P MMOG due to each specific drop-out factors present in the conceptual model, the collected data tell us the following:

- 45.8% due to lack of game fairness.
- 33.3% due to community;
- 32.2% have already quit due to latency/performance issues;
- 31.3% due to in-game features;
- 22.9% due to service/support team;

More than half of the players in the sample spend no money in F2P MMOGs. 43.7% of the players spend money on F2P MMOGs and 83.3% of those premium players spend on average per month something in the range]0-20] USD. See the detailed information in table 4.

Only 35.8% of the players didn't spend money in games they have eventually quit.

Table 4 – Money that players spend on average per month in F2P MMOGs.

Money/Month	#	%	Non-Premium	Premium
0 USD	54	56.3	56.3%	
]0-20] USD	35	36.5		43.7%
]20-50] USD	3	3.1		
]50-200] USD	3	3.1		
More than 200 USD	1	1.0		
Total	96	100		

In order to test the five hypotheses in this study, the Spearmen correlation coefficients were found for each construct, as the items of every construct in the survey were designed with a 5-point Likert scale. A coefficient between 0.500 and 0.700 implies a moderated correlation and higher than 0.700 is a strong correlation. The correlation of dropping out and every construct was significant (p=0.000) and positive, thus sustaining H1, H2, H3, H4 and H5.

Moreover, the relation between drop-out and game fairness is strong. Besides that, the relation between drop-out and latency/performance issues, drop-out and in-game features, drop-out and community is moderated (0.635, 0.583 and 0.505, respectively). The only correlation coefficient which is weak (<0.500) is the one between drop-out and service/support team.

Table 5 – Correlation matrix.

	Drop-out	Latency	Features	Community	Service	Fairness
Drop-out	1					
Latency	0.635**	1				
Features	0.583**	0.303**	1			
Community	0.505**	0.362**	0.286**	1		
Service	0.482**	0.153	0.114	-0.018	1	
Fairness	0.706**	0.170	0.282	0.059	0.294**	1

** *p<0.01*

Complementing this, a multiple regression was performed, where the dependent variable is "Drop-out" and the model predictors are the factors under study. The R^2 obtained is 0.539, thus 53.9% of the variation in drop-out is explained by the significant (p<0.05) predictors (latency/performance issues, in-game features, community, service/support team and game fairness). Latency/performance issues has a standardized beta of 0.346 (p=0.000),

in-game features 0.256 (p=0.000), community 0.286 (p=0.000), service/support team 0.300 (p=0.000) and game fairness 0.444 (p=0.000).

Table 6 – Multiple regression results.

Predictors	Standardized β
Latency	0.346
Features	0.256
Community	0.286
Service	0.300
Fairness	0.444

$R^2=0.539$

Moving forward to the next statistical test – chi-square test of independence –, it'll be possible to check whether or not dropping-out of a F2P MMOG due to each of the factors under study is dependent on being a premium/non-premium player.

Dropping-out due to game fairness is the only element which has a slightly significance level lower than 0.05. Therefore the null hypothesis is rejected, since there's no statistical evidence to consider the independence between dropping-out due to game fairness and being a premium/non-premium player. The next step is then looking into the risk estimate, which give the information a premium player is 2.3 times more likely to quit a F2P MMOG due to game fairness than a non-premium player. Also, in the worst case scenario, the odds ratio between premium and non-premium players would be 5.2, whereas the other edge would have a ratio of 1.0.

Table 7 shows the detailed information on the chi-square test of independence and risk estimate.

Table 7 – Chi-Square test of independence (left) and risk estimate (right).

	Pearson Chi-Square	Significance (2-sided)	Risk Estimate	95% Confidence	
				Lower	Upper
DropL	1.271	0.260	-		
DropF	0.151	0.698	-		
DropC	0.000	1.000	-		
DropST	0.633	0.426	-		
DropGF	3.847	0.0498	Premium/Non-premium 2.267	0.995	5.166

DropL – drop-out due to latency/performance issues; DropF – drop-out due to in-game features; DropC – drop-out due to community; DropST – drop-out due to service/support team; DropGF – drop-out due to game fairness.

Players were asked to give their opinion on S1, S2, S3 and S4 (see "Conceptual Model" section) based on a 5-point Likert scale – (1) Strongly disagree, (2) Somewhat disagree, (3) Neither agree nor disagree, (4) Somewhat agree and (5) Strongly agree – and to rate the importance they give to the five drop-out factors when deciding to leave a F2P MMOG, using also a 5-point Likert scale - (1) Far below average, (2) Somewhat below average, (3) Average, (4) Somewhat above average and (5) Far above average.

Regarding the four sentences, S2 and S3 got the average scores (2.3 and 4.4, respectively) which are more distant from the neutral option on the scale (neither agree nor disagree). Thus, players believe that having a great support team is not more important than the game fairness and there's no sense on deploying new features that will make F2P MMOGs unfair. When looking at the average scores rating the importance of each drop-out factor when deciding to quit a F2P MMOG, it's notorious that game fairness wins the game with a score of 4.3, followed by latency/performance issues with 3.6 and service/support team with 3.4. In the bottom of the ranking, community has a score of 3.1 and in-game features 3.0. Table 8 shows the detailed information.

Table 8 – Average score of players' opinions on the four sentences surveyed and average score of importance players give to each drop-out factor when deciding to stop playing a F2P MMOG.

Sentence	Average Score	Drop-out Factor	Average Score
S1	3.31	**Game Fairness**	4.25
S2	2.34	**Latency/Performance Issues**	3.59
S3	4.36	**Service/Support Team**	3.44
S4	2.76	**Community**	3.13
		In-game Features	3.02

6.2 Age Analysis

The data of table 1 regarding the respondents age is summarized in figure 5.

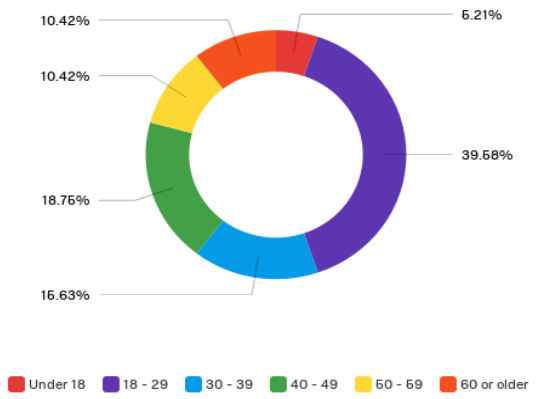

Figure 5 – Respondents age.

In the sample there is no female between 40 and 59 years old. The age range containing more female respondents (26.7%) is 30-39. Figure 6 shows the respondents gender split by age.

Figure 6 – Respondents gender split by age.

To the question “What’s your native country?”, 60% of the respondents under 18 years old are from the USA and the UK, 31.6% between 18-29 years old are from English-speaking countries (USA, UK, Canada and Australia). Only 20% of the respondents between 30 and 39 years old are from English-speaking countries. Slightly more than half of the respondents (55.56%) between 40 and 49 are from English-speaking countries, 30% of the respondents between 50 and 59 are from USA and UK and 70% of the respondents over 60 years old are from USA and UK. This information is shown in figure 7.

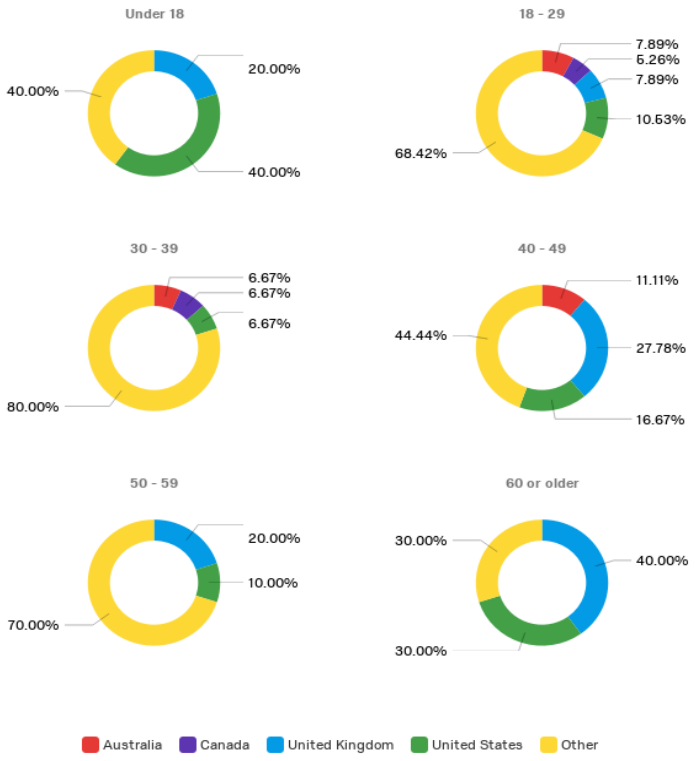

Figure 7 - Respondents native country split by age.

To the question “How much money do you spend per month, on average, in F2P MMOGs?”, under 18, 18-29 and 50-59 are the age ranges that spend less money. Players over 60 years old, as shown in table 8, spend more money on average.

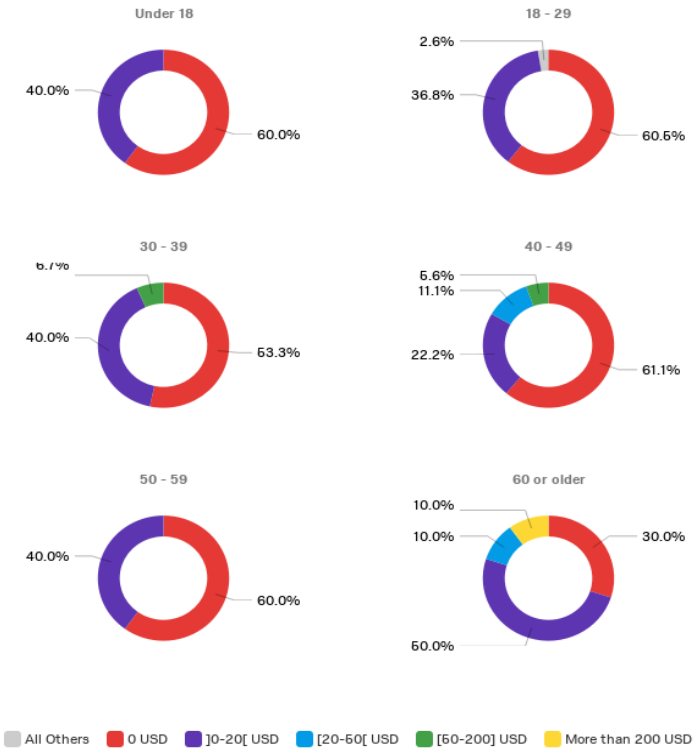

Figure 8 – Money spent per month split by age.

When considering all the reasons why players quit F2P MMOGs, it's possible to check in figure 9 that personal issues and the gap between premium and non-premium players play a major role in every age range.

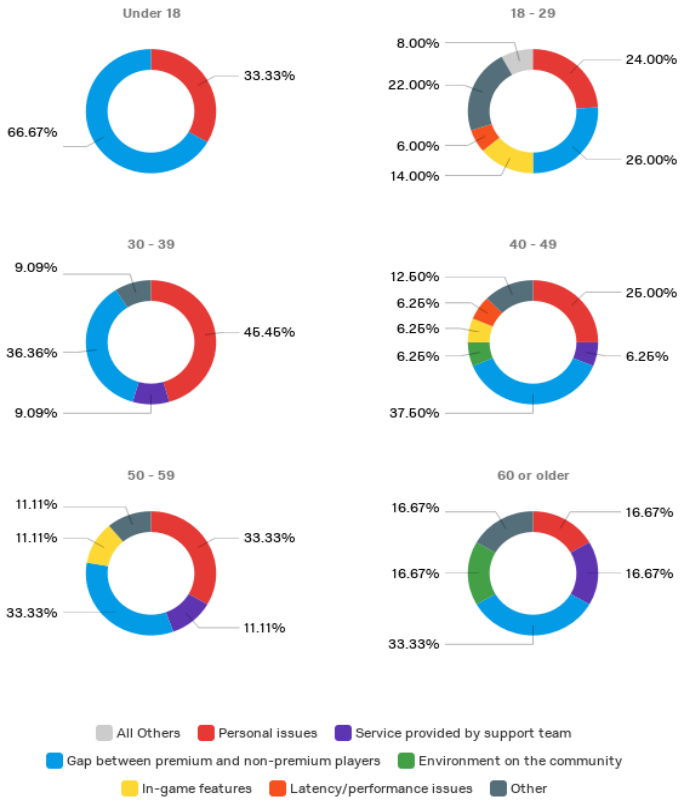

Figure 9 – Reasons for quitting F2P MMOGs split by age.

No respondent under 18 have purchased premium currency in F2P MMOGs they did eventually quit. 22.2% of the respondents in the range 30-39, 32.2% in the range 18-29, 45.6% in the range 40-49 and 50% in the range 50-59 haven't quit games where they did spend money. All respondents in the range 60 or older did stop playing at least some games where they did spend money. These data is shown in figure 10.

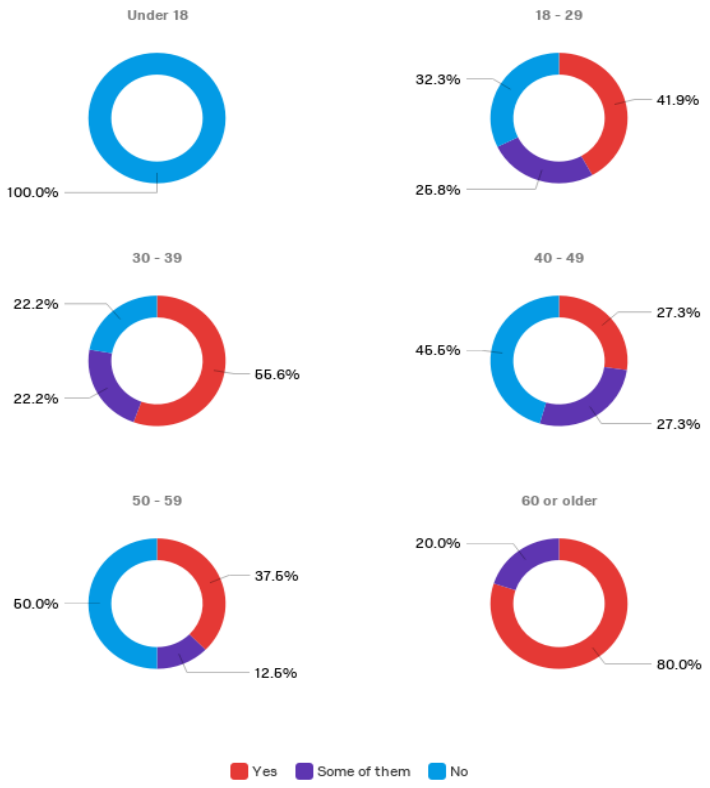

Figure 10 – Respondents answers to the question "Did you send money on the games you quit?" split by age.

Regarding the five drop-out factors analysed in this thesis, the following information was obtained:

- Under 18. 20% of the respondents have quit F2P MMOGs due to latency/performance issues, 40% due to in-game features, 40% due to community factors, 40% due to bad service provided by the support team, 60% due to lack of game fairness.
- 18-29. 28.9% of the respondents have quit F2P MMOGs due to latency/performance issues, 31.6% due to in-game features, 36.8% due to community factors, 15.8% due to bad service provided by the support team, 52.6% due to lack of game fairness.
- 30-39. 40% of the respondents have quit F2P MMOGs due to latency/performance issues, 40% due to in-game features, 33.3% due to community factors, 20% due to bad service provided by the support team, 40% due to lack of game fairness.
- 40-49. 27.8% of the respondents have quit F2P MMOGs due to latency/performance issues, 27.8% due to in-game features, 11.1% due to

community factors, 33.3% due to bad service provided by the support team, 33.3% due to lack of game fairness.

- 50-59. 40% of the respondents have quit F2P MMOGs due to latency/performance issues, 40% due to in-game features, 50% due to community factors, 30% due to bad service provided by the support team, 50% due to lack of game fairness.
- 60 or older. 40% of the respondents have quit F2P MMOGs due to latency/performance issues, 10% due to in-game features, 40% due to community factors, 20% due to bad service provided by the support team, 40% due to lack of game fairness.

The data is shown from figure 11 to figure 15.

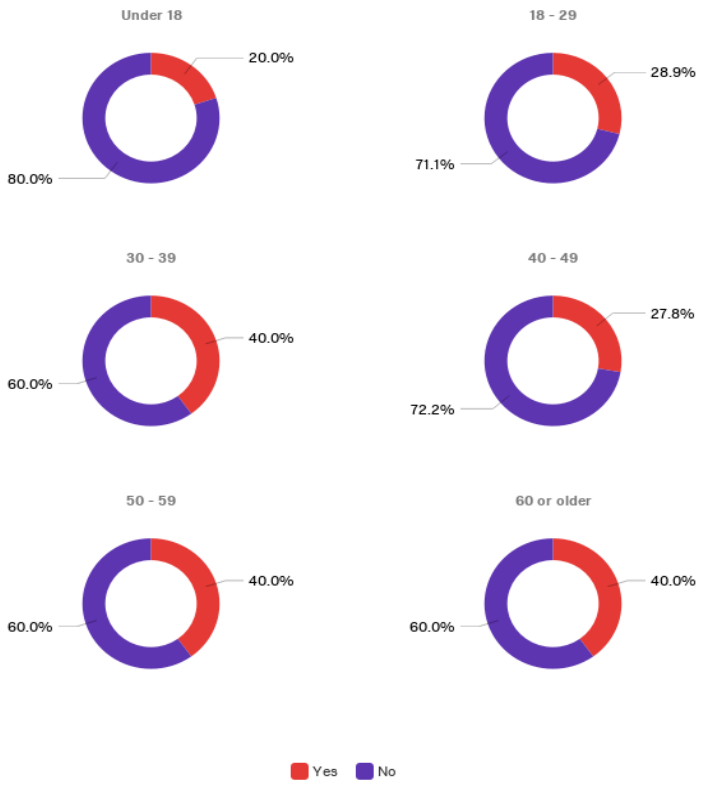

Figure 11 – Answers to the question "Did you quit a game already due to latency/performance issues?" split by age.

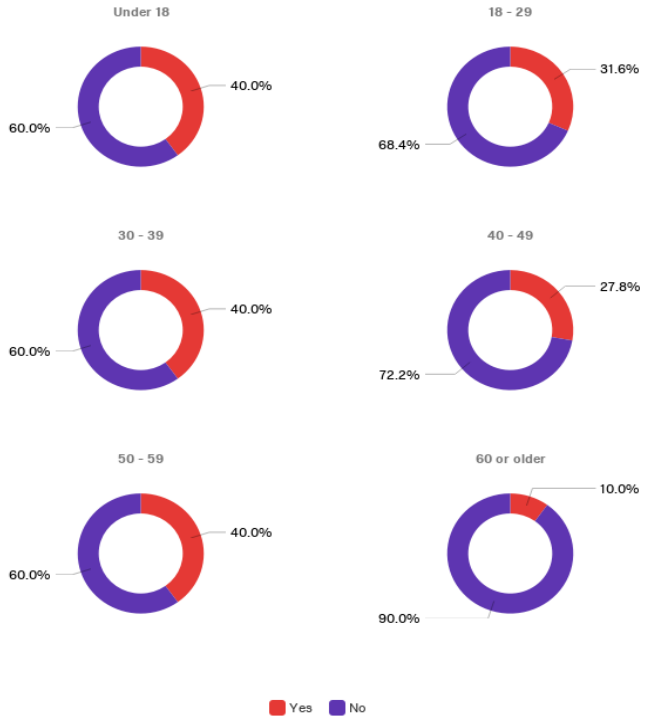

Figure 12 – Answers to the question "Did you quit a game already due to in-game features?" split by age.

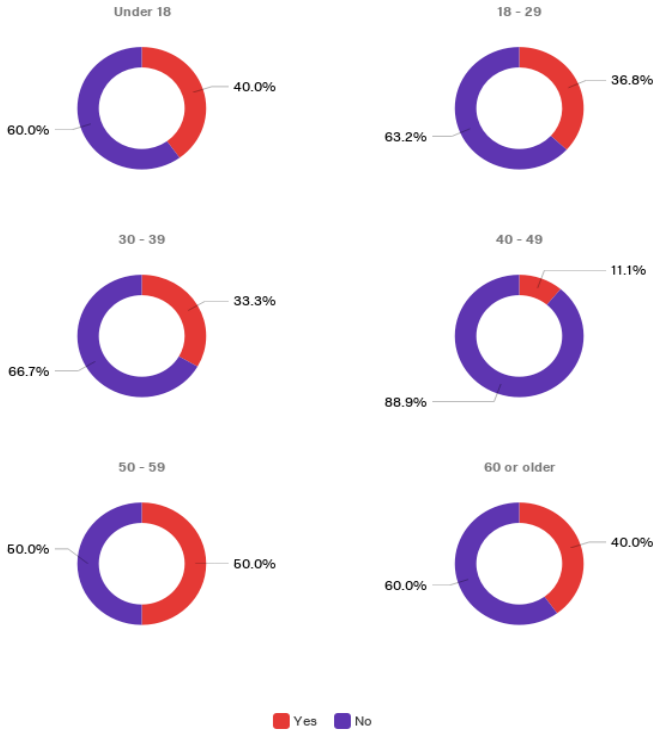

Figure 13 – Answers to the question "Did you quit a game already due to community factors?" split by age.

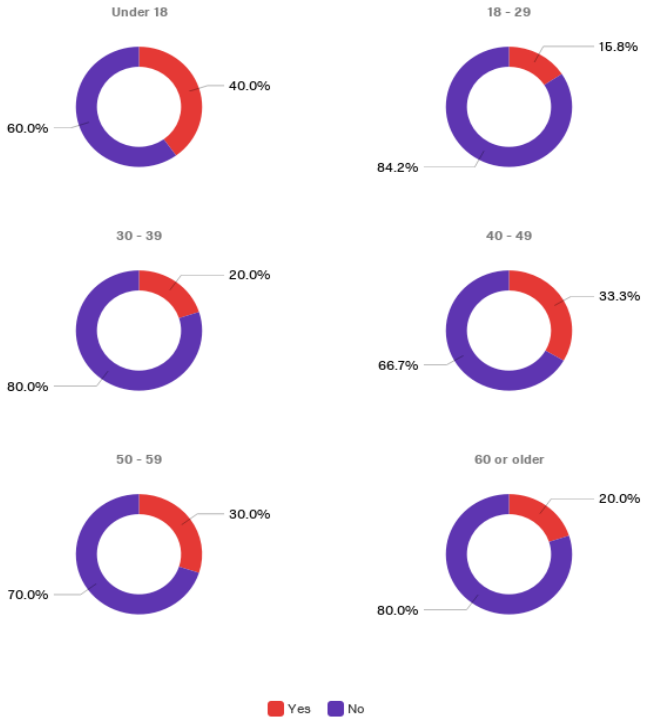

Figure 14 – Answers to the question "Did you quit a game already due to a bad service provided by the support team?" split by age.

Figure 15 – Answers to the question "Did you quit a game already due to a lack of game fairness in the game?" split by age.

6.3 Gender Analysis

The data of table 1 regarding the respondents gender is summarized in figure 16.

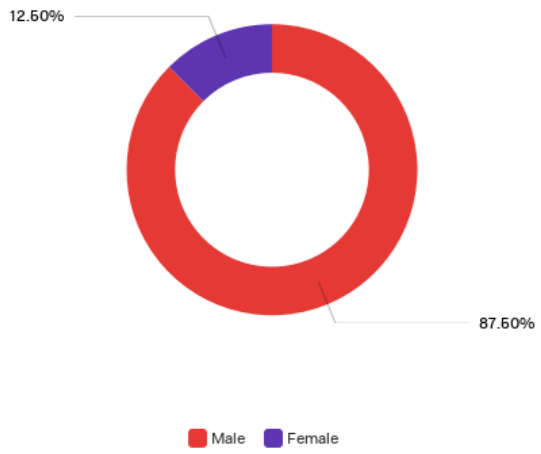

Figure 16 – Respondents gender.

In the sample 75% of the female are between 18 and 39 years old and 73.8% of the male are between 18 and 49 years old. Figure 17 shows the respondents gender split by gender and complements figure 6.

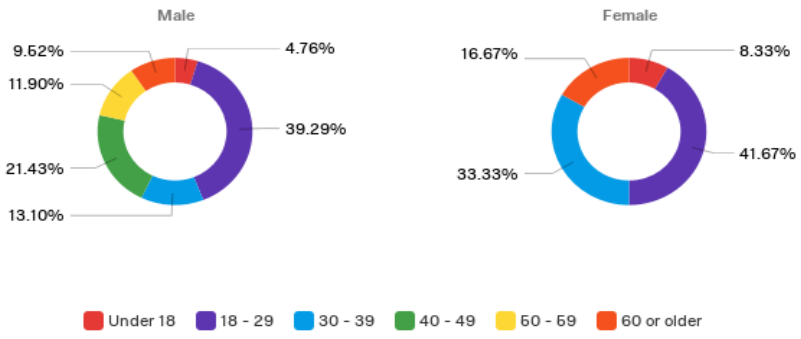

Figure 17 – Respondents age split by gender.

To the question "What's your native country?", 25% of the female are from the USA and only 31.7% of the male are from English-speaking countries (USA, UK, Canada and Australia). This information is shown in figure 18.

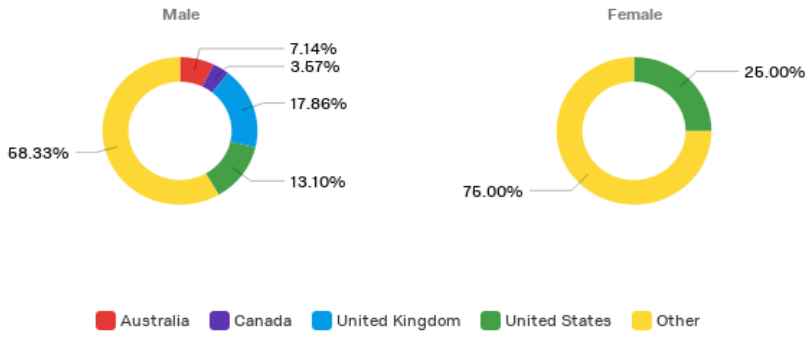

Figure 18 - Respondents native country split by gender.

To the question "How much money do you spend per month, on average, in F2P MMOGs?", the majority of female (66.7%) spend between 0 and 20 USD and 33.3% don't spend money at all. 59.5% of the male don't spend money on F2P MMOGs, 32.1% spend between 0 and 20 USD and 8.3% spend more than 20 USD. This information is shown in figure 19.

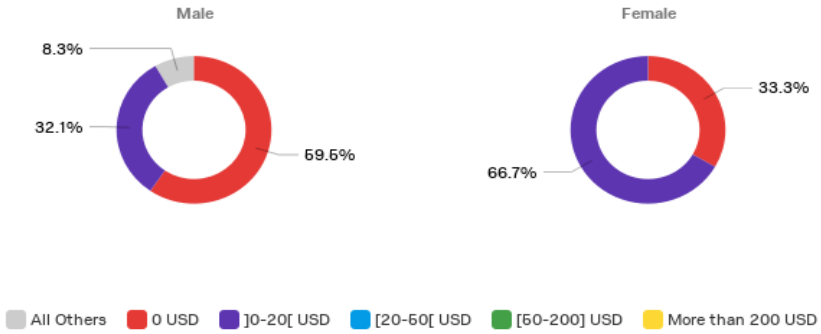

Figure 19 – Money spent per month split by gender.

When considering all the reasons why players quit F2P MMOGs, it's possible to check in figure 20 that personal issues and the gap between premium and non-premium players are the most relevant factors on both genders.

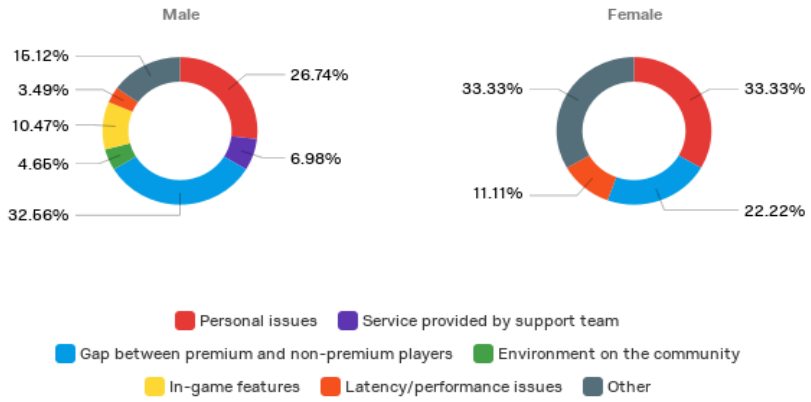

Figure 20 – Reasons for quitting F2P MMOGs split by gender.

Moreover, 62.7% of the male have purchased premium currency at least in some F2P MMOGs they did eventually quit against 75% of the female, as shown in figure 21.

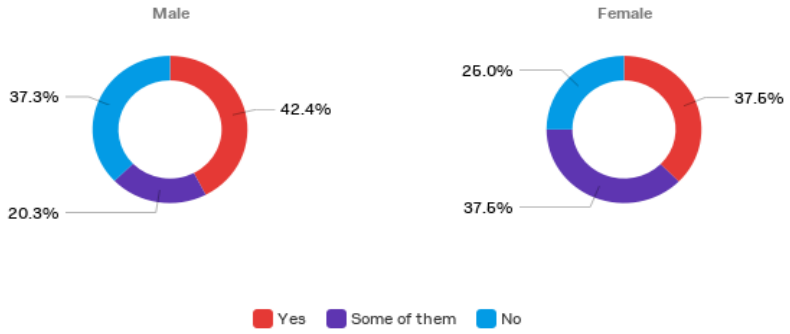

Figure 21 – Respondents answers to the question "Did you send money on the games you quit?" split by gender.

Regarding the five drop-out factors analysed in this thesis, the following information was obtained:

- Male. 31% of the respondents have quit F2P MMOGs due to latency/performance issues, 32.1% due to in-game features, 34.5% due to community factors, 22.6% due to bad service provided by the support team, 46.4% due to lack of game fairness.
- Female. 41.7% of the respondents have quit F2P MMOGs due to latency/performance issues, 25% due to in-game features, 25% due to community factors, 25% due to bad service provided by the support team, 41.7% due to lack of game fairness.

The data is shown from figure 22 to figure 26.

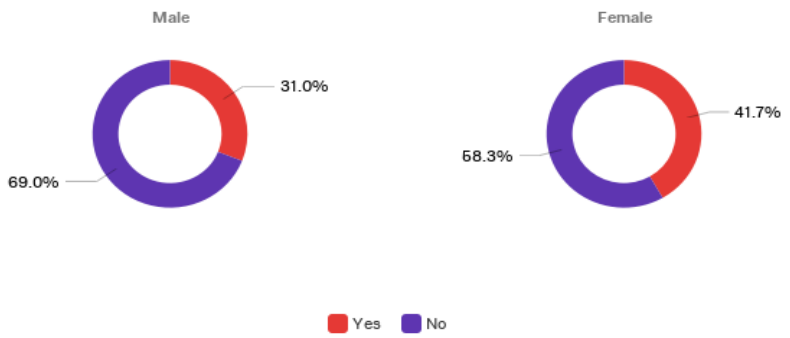

Figure 22 – Answers to the question "Did you quit a game already due to latency/performance issues?" split by gender.

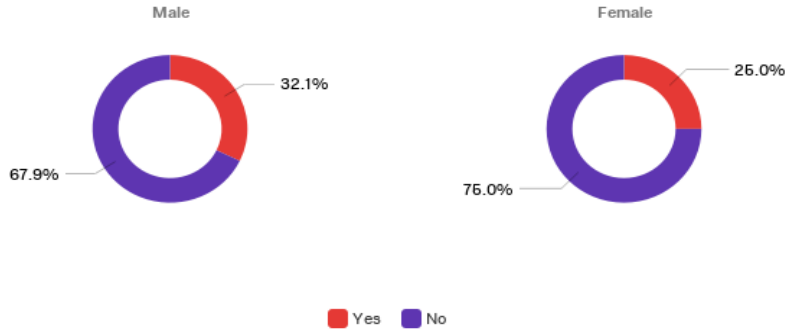

Figure 23 – Answers to the question "Did you quit a game already due to in-game features?" split by gender.

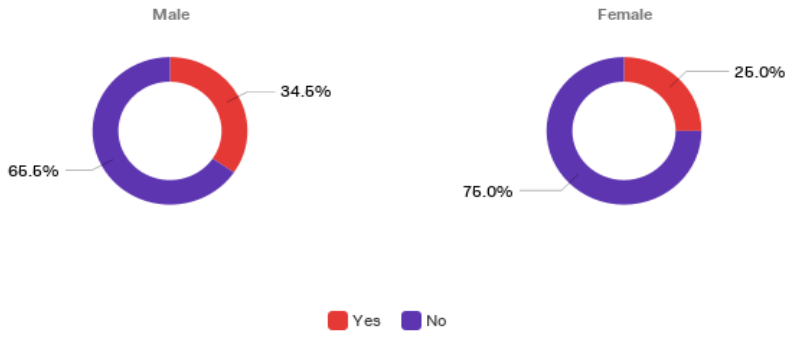

Figure 24 – Answers to the question "Did you quit a game already due to community factors?" split by gender.

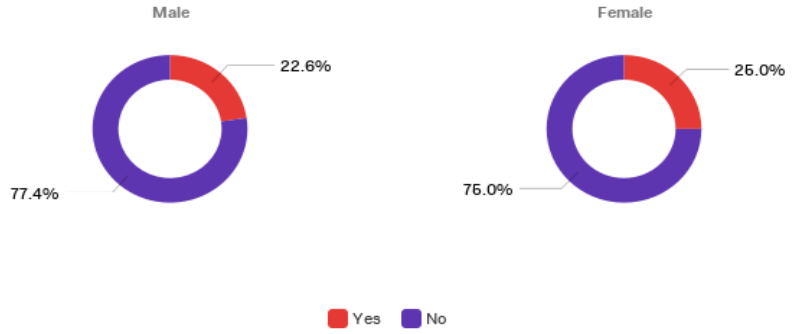

Figure 25 – Answers to the question "Did you quit a game already due to a bad service provided by the support team?" split by gender.

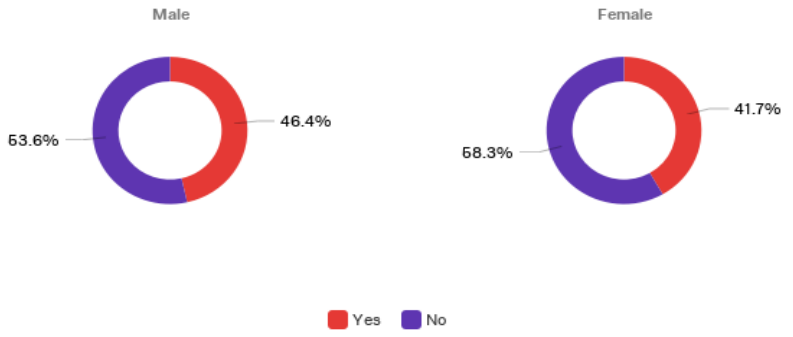

Figure 26 – Answers to the question "Did you quit a game already due to a lack of game fairness in the game?" split by gender.

6.4 Money Spent per Month Analysis

The data of table 4 regarding the money spent per month in F2P MMOGs by the respondents is summarized in figure 27.

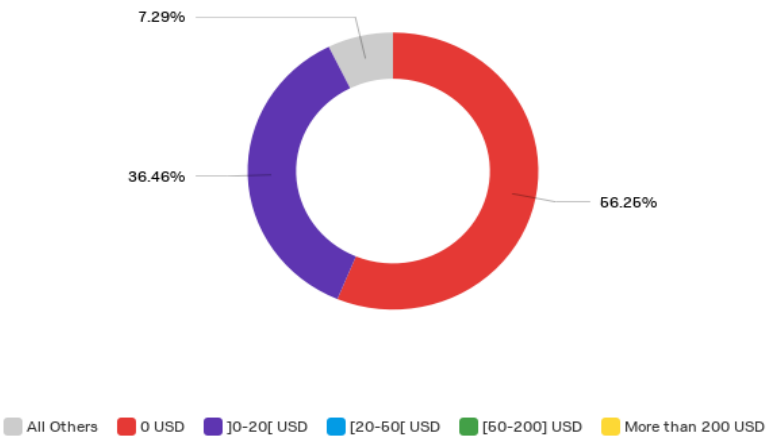

Figure 27 – Money spent per month in F2P MMOGs by the respondents.

When considering all the reasons why players quit F2P MMOGs, figure 28 shows that the gap between premium and non-premium players and personal issues play a major role for respondents who don't spend money at all (64.6%) and who spend up to 20 USD (57.9%) per month in F2P MMOGs. For respondents who spend between 20 and 50 USD latency/performance issues was the only reason appointed. Respondents who spend between 50 and 200 USD quit F2P MMOGs due to the gap between premium and non-premium (33.3%), the service provided by the support team (33.3%), latency/performance issues (16.7%) and personal issues (16.7%). Environment on the community was pointed out by 50% of the respondents who spend more than 200 USD.

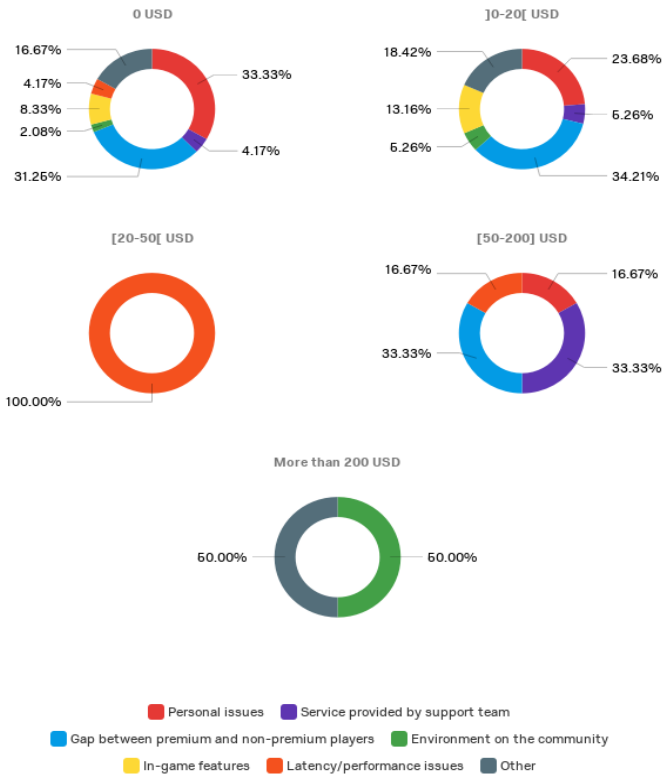

Figure 28 – Reasons for quitting F2P MMOGs split by money spent per month.

Moreover, only a small percentage of the respondents state they didn't spend money on games they did eventually quit, as shown in figure 29.

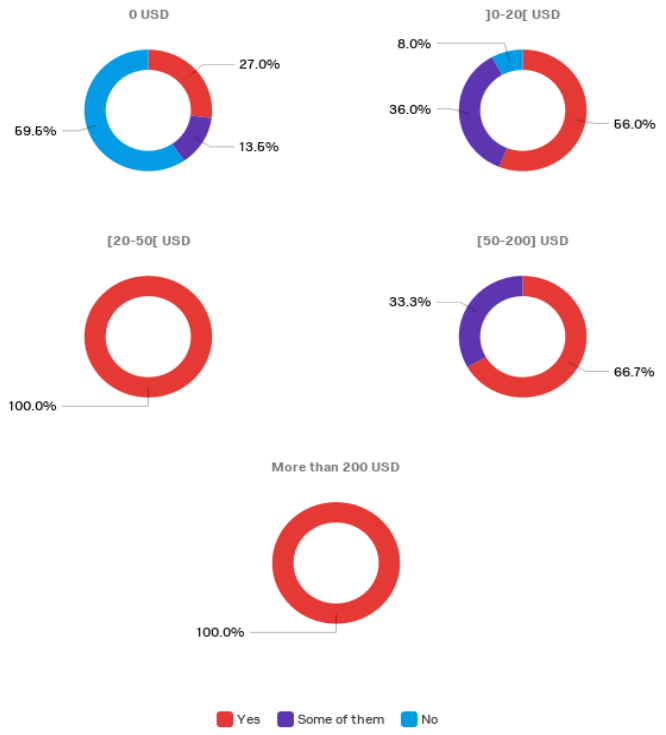

Figure 29 – Respondents answers to the question "Did you send money on the games you quit?" split by money spent per month.

Regarding the five drop-out factors analysed in this thesis, the following information was obtained:

- 0 USD. 37% of the respondents have quit F2P MMOGs due to latency/performance issues, 29.6% due to in-game features, 33.3% due to community factors, 25.9% due to bad service provided by the support team, 37% due to lack of game fairness.
-]0-20[USD. 22.9% of the respondents have quit F2P MMOGs due to latency/performance issues, 37.1% due to in-game features, 37.1% due to community factors, 17.1% due to bad service provided by the support team, 62.9% due to lack of game fairness.
- [20-50[USD. 33.3% of the respondents have quit F2P MMOGs due to latency/performance issues, 0% due to in-game features, 0% due to community factors, 33.3% due to bad service provided by the support team, 0% due to lack of game fairness.
- [50-200], 33.3% of the respondents have quit F2P MMOGs due to latency/performance issues, 33.3% due to in-game features, 0% due to

community factors, 33.3% due to bad service provided by the support team, 66.7% due to lack of game fairness.

- More than 200 USD. 100% of the respondents have quit F2P MMOGs due to latency/performance issues, 0% due to in-game features, 100% due to community factors, 0% due to bad service provided by the support team, 0% due to lack of game fairness.
-

The data is shown from figure 30 to figure 34.

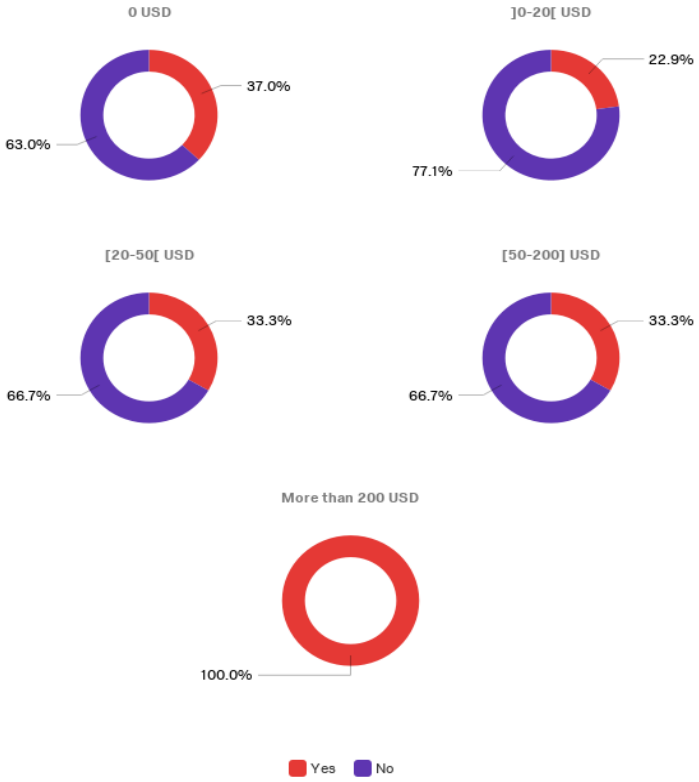

Figure 30 – Answers to the question "Did you quit a game already due to latency/performance issues?" split by money spent per month.

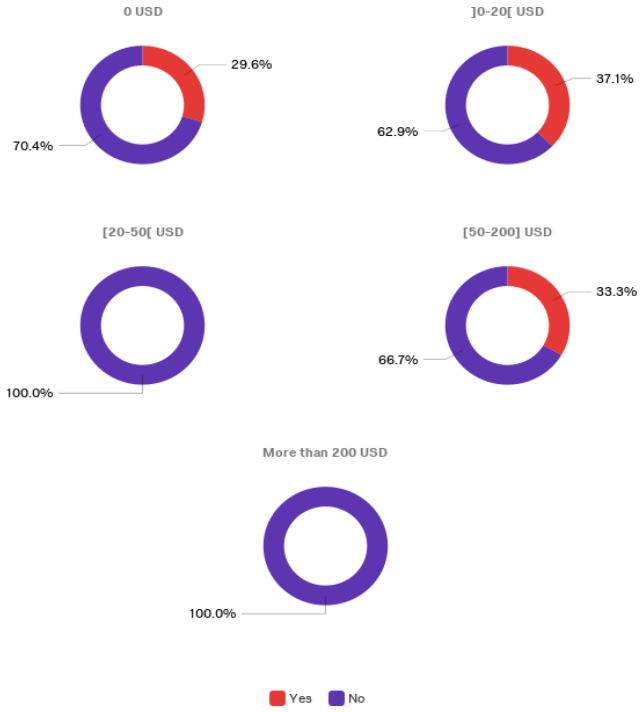

Figure 31 – Answers to the question "Did you quit a game already due to in-game features?" split by money spent per month.

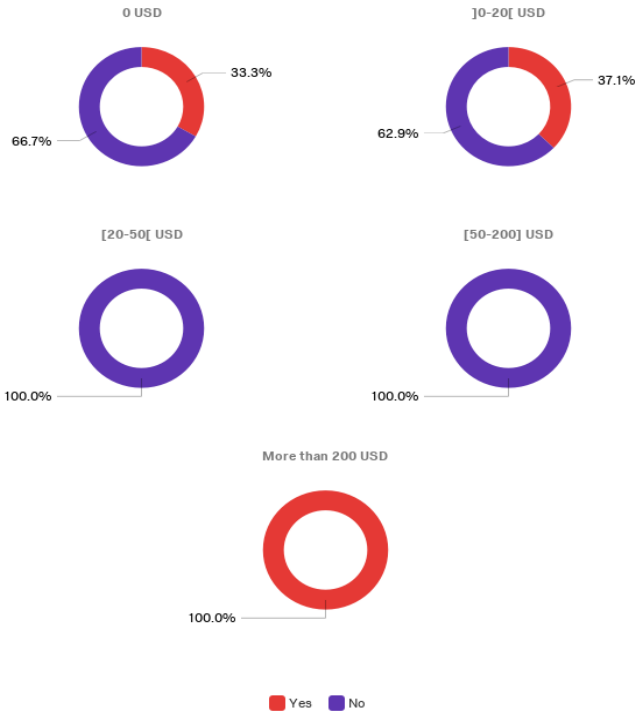

Figure 32 – Answers to the question "Did you quit a game already due to community factors?" split by money spent per month.

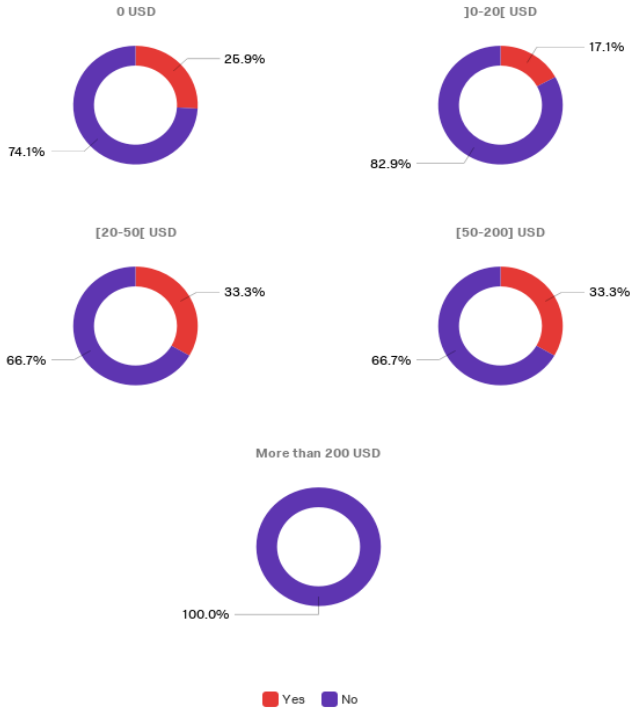

Figure 33 – Answers to the question "Did you quit a game already due to a bad service provided by the support team?" split by money spent per month.

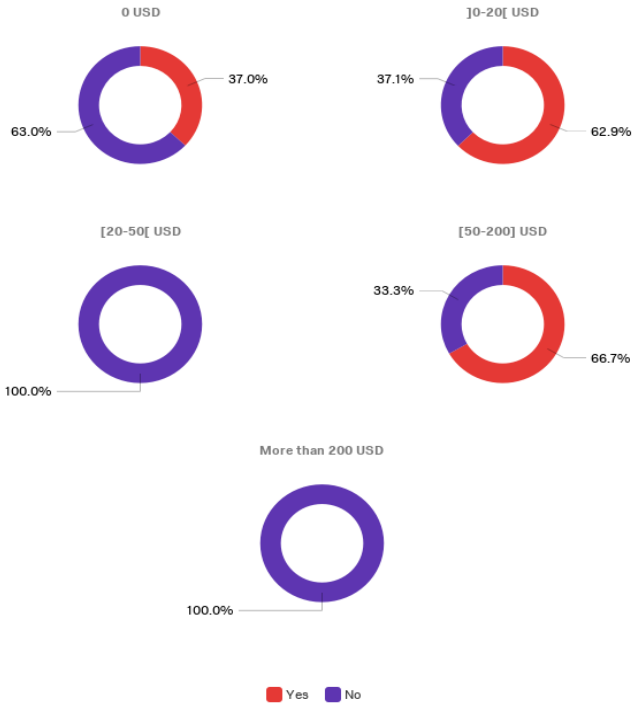

Figure 34 – Answers to the question "Did you quit a game already due to a lack of game fairness in the game?" split by money spent per month.

7 Discussion

This study's objective was to understand what are the most relevant drop-out factors among the players of F2P MMOGs and compare game fairness (gap between premium and non-premium players) with it. Although some limitations to the study can be enumerated, the research questions were successfully addressed.

The first thing to point out is related with the sample size. 96 valid responses is a reduced number and is under the expectation of every side involved in the thesis. Unfortunately, due to confidentiality reasons the timeframe negotiated with company XPTO to run the survey could not be extended. It was also not possible to find many studies based on surveys to have a good mean of comparison. Despite these two facts, it was possible to come to certain findings, which are summarized in the next chapter.

A significant percentage of players have already left F2P MMOs due to factors that can be controlled by PMs. There are plenty different games in the market with the same basic features. Thus, when players are not satisfied with some aspects in a game they have many alternatives to choose from, making drop-out a game and easy option if those aspects are not addressed by the "people in charge".

Game fairness, as proposed by Hamari (2015), Lin and Sun (2007 and 2011) and Paavilainen *et al.* (2013), and latency/performance issues, spotted on by Achterbosch *et al.* (2008), Chambers *et al.* (2010) and Yahyavi and Kemme (2013), community (Lee *et al.*, 2007), service/support team and in-game features (Anderson, 2009; Lee *et al.*, 2007) are significant drop-out factors that can be controlled by PMs. From those, game fairness and latency seem to be the most important factors when deciding to quit a F2P MMOG, since both factors got higher scores in every test than the other three factors. It's also obvious that players believe that having a great support team is not more important than game fairness and there's no sense on deploying new features that will make F2P MMOGs unfair.

The research question "Are the drop-out factors common to premium and non-premium players?" brought to light a very curious conclusion. All factors tend to be common to both types of players, but game fairness - a premium player will more likely quit a F2P MMOG due to game fairness than a non-premium player. Although this sounds odd, it may be explained by the nature of competition existent in F2P MMOGs. Dauriat et al. (2011) and Yee (2006) found out that the achievement component of player's motivation to play

MMOGs included the competitiveness of the game. By having huge advantages for investing in the game, premium players may be bored due to lack of competition and so they leave it.

Moreover only a small percentage of the respondents states they didn't spend money on games they did eventually quit. The majority of that small percentage are players that currently don't spend money at all in F2P MMOGs. When considering only the five drop-out factors in focus on this thesis, players who don't spend money in F2P MMOGs have quit games more due to latency/performance issues and game fairness (37% each). Players who spend]0-20[USD per month have quit more due to game fairness (62.9%). Players that spend something in the range [20-50[USD have quit already F2P MMOGs only due to latency/performance issues and service provided by support team (33.3% each). In the range [50-200] USD, players have quit more due to game fairness (66.7%). Players who spend more than 200 USD have quit F2P MMOGs only due to latency/performance issues and community (100% each).

The age ranges that spend less money on average per month in F2P MMOGs are under 18, 18-29 and 50-59 and players over 60 years old tend to spend more money on average. No respondent under 18 have purchased premium currency in F2P MMOGs they did eventually quit. 45.6% in the range 40-49 and 50% in the range 50-59 haven't quit games where they did spend money. All respondents in the range 60 or older did stop playing at least some games where they did spend money.

Personal issues and the gap between premium and non-premium players play a major role in every age range – gap between premium and non-premium players more visible in respondents under 18 years old and personal issues on the range 30-39. When considering only the five drop-out factors in focus on this thesis, under 18 years old is the age range that have quit more due to game fairness (60%). However, service provided by support team, community and in-game features play also an important role in this range with the same percentage (40%) each. In the range 18-29, more than half of the respondents have quit due to game fairness and those players quit less due to the service provided by the support team. In the range 30-39, players give less importance (20%) to the service provided by the support team and latency/performance issues, in-game features and game fairness have the same percentage of drop-out (40%). In the range 40-49, game fairness and service provided by the support team are more relevant and community less relevant. More than half of the players

between 50 and 59 years old have quit F2P MMOGs due to game fairness and community. Actually, this is the age range that quit more due to community. Players with 60 years old or more give less importance to in-game features and service provided by the support team.

The gender analysis brought to light that more than a half of the male respondents don't spend money at all in F2P MMOGs against one third of the female respondents. Most part of female spends small amounts of money and some male spend high amounts. When considering all the reasons why players quit F2P MMOGs, personal issues and the gap between premium and non-premium players are the most relevant factors on both genders. Moreover, 62.7% of the male have purchased premium currency at least in some F2P MMOGs they did eventually quit against 75% of the female. When considering only the five drop-out factors in focus on this thesis, the most relevant in male is game fairness and the least relevant is the service provided by the support team. The female gender seems to give more importance to game fairness and latency/performance issues. Also latency/performance issues are more relevant for the female gender than for the male gender, in-game features and community more relevant to the male gender and the service provided by the support team and game fairness are equally important for both genders.

8 Conclusion

This last chapter includes the findings and contributions of this research.

8.1 Findings

This study's goal is to understand why players stop playing F2P MMOGs, focusing on the factors that PMs can somehow control, and test out the importance of the gap between premium and non-premium players when deciding to leave those kind of games. It was possible to come to the following conclusions:

- A significant percentage of players have already left F2P MMOs due to factors that can be controlled by PMs.
- Game fairness, latency/performance issues, service/support team and in-game features are significant drop-out factors that can be controlled by PMs.

- Game fairness and latency seem to be the most important factors when deciding to quit a F2P MMOG.
- Players believe that having a great support team is not more important than the game fairness and there's no sense on deploying new features that will make F2P MMOGs unfair.
- A premium player will more likely quit a F2P MMOG due to game fairness than a non-premium player.
- Only a small percentage of the sample states haven't spent money on games they did eventually quit and most part of it are also players that currently don't spend money at all in F2P MMOGs.
- Players over 60 years old spend more money per month on F2P MMOGs and every player in this range did stop playing at least some games where they did spend money.
- Latency/performance issues are more relevant for the female gender than for the male gender, in-game features and community are more relevant factors to the male gender and the service provided by the support team and game fairness are equally important for both genders.

8.2 Research Contributions

The present research intends to help PMs understanding several aspects regarding drop-out factors in the demanding and fast paced industry of F2P MMOGs.

First of all, this research delivers a complete analysis on drop-out factors that can be controlled, allowing PMs to have a clear notion of those when designing and developing F2P MMOGs. Besides that, PMs have also in this study useful data that may ease their overviews on what is essential for players. Of course that listen the player communities and give significance to their concerns and suggestions is a key component to bring success to a F2P MMOG.

Moreover, realizing that the gap between premium and non premium players may be harmful to F2P MMOGs it's extremely important, as it was proven to be a very significant drop-out factor. Also, the level of importance of game fairness when compared with other drop-out factors that can be controlled may help PMs prioritizing the issues to address.

Finally, with this study, the lack of information existent (up to this moment) in the scientific community related to drop-out factors that can be controlled becomes less concerning.

8.3 Research Limitations and Drawbacks

There are some limitations in this research which could not be, due to time, limited resources and confidentiality reasons, overcame.

The first limitation to point out is the low number of valid responses to the survey, which affect the conclusions.

Even though 32.3% of the respondents stated having played several games from other companies besides XPTO, surveying players through a single company channels may not give accurate conclusions for the whole market of F2P MMOG.

Also, F2P MMOGs are divided in several categories. As the research was not split in those several categories, some specific drop-out factors may be more or less relevant for each category.

As a final note, although the correspondent explanations/definitions were included in the survey and a specific mandatory question intended to avoid it, the survey recipients may have not understood well enough what free-to-play MMOGs are. The lack of knowledge or biased concepts may cause error on the analysis of the results.

8.4 Managerial Implications e Future Research Directions

The conclusions of this thesis provide several hints that Product Managers of F2P MMOGs may turn into tips and key points when deciding how to develop their games, as the factors studied on this thesis came up to be very important to players when deciding to leave F2P MMOGs.

It’s proven that the gap between premium and non-premium players plays a major role as a drop-out factor, but there’s more. This thesis also concludes that players that spend money in-game are more likely to stop playing it, probably due to the competitiveness of the game and the “boringness factor”. Also the age range that currently spends higher amounts (over 60 years old) did stop playing already at least some of the games where they invested

money. Thus, PMs must not only pay attention to game balance in terms of features that create the gap of advantage between premium and non-premium players, but also make sure to retain both categories, in order to don't damage the competitiveness of the game and try to avoid the game to become boring. It means that the so-called premium features must be optimized so that the advantage to those who invest on them don't refrain non-premium players to compete with premium players. Moreover, new features, in-game events and an engaged community will help to avoid boringness and to retain players.

Latency/performance issues is another important drop-out factor. Thus, PMs must assure that the game runs fine in a wide range of devices, operative systems and browser, since they have no control in which of those players will pick to play.

Finally, based on the limitations of this thesis, it's valuable to focus future researches on each of the categories of F2P MMOGs and compare them, realizing whether there's a big difference in the conclusions or not. Also, future researches could deeply study the impact of drop-out factors in several player investment ranges in order to better realize what would be needed to retain each of those players.

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Appendix

Appendix A - Survey

(The words marked in red were changed due to anonymity reasons.)

Title: Drop-out factors in MMOGs

Hello,

My name is Inês and I am currently working on my Master Thesis in collaboration with XPTO. The information collected in this survey will be exclusively used for my academic research and will neither be given away to third parties nor be shown for profit purposes.

The questions on this survey focus on free-to-play Massive Multiplayer Online Games (F2P MMOGs). F2P MMOGs are videogames played online where a large quantity of individuals can interact simultaneously in persistent worlds.

As you most likely already played at least one F2P MMOG (GAME NAME), I would like to humbly ask you for your help to complete this survey.

Your participation would be greatly appreciated. Your response is anonymous.

Thank you for your time, effort and honesty.

Demographic Questions

What's your age?

- ❍ Under 18
- ❍ 18 - 29
- ❍ 30 - 39
- ❍ 40 - 49
- ❍ 50 - 59
- ❍ 60 or older

What's your gender?

- ❍ Male
- ❍ Female

What's your native country?

- ❍ Australia
- ❍ Canada
- ❍ United Kingdom
- ❍ United States
- ❍ Other _____

General Questions

Which F2P MMOGs do/did you play?

_____

How much money do you spend per month, on average, in F2P MMOGs?

- ❍ 0 USD
- ❍]0-20[USD
- ❍ [20-50[USD
- ❍ [50-200] USD
- ❍ More than 200 USD

Did you already quit a F2P MMOG?

- ❍ Yes
- ❍ No

If No Is Selected, Then Skip To Latency/Performance Issues (Delay bet...

Answer If Did you already quit a F2P MMOG? Yes Is Selected

The reason(s) why you left the game(s) was(were) related with which element(s)?

- ❑ Personal issues
- ❑ Service provided by support team
- ❑ Gap between premium and non-premium players
- ❑ Environment on the community
- ❑ In-game features
- ❑ Latency/performance issues
- ❑ Other _____

Which particular games are we talking about?

_____

Did you spend money on those games?

- ❍ Yes
- ❍ Some of them
- ❍ No

Latency/Performance Issues (Delay between ordering an action and its execution)

Please select for each sentence the option that most reflect your opinion. Don't forget that by "game" we refer to F2P MMOGs.

	(1)	(2)	(3)	(4)	(5)
I get impatient for a game's high latency and therefore stop playing.	❍	❍	❍	❍	❍
I would quit a game with lots of performance issues.	❍	❍	❍	❍	❍
When the game developers show no concern to fix performance issues, I lose interest in the game.	❍	❍	❍	❍	❍
Latency is part of the game, but fixing the problems deriving from it is essential for my staying in a game.	❍	❍	❍	❍	❍
Latency is an important element that affects my continuation on the game.	❍	❍	❍	❍	❍

Did you quit a game already due to latency/performance issues?

- ❍ Yes
- ❍ No

In-game Features (Functions and objects that are part of the game environment)

Please select for each sentence the option that most reflect your opinion. Don't forget that by "game" we refer to F2P MMOGs.

	(1)	(2)	(3)	(4)	(5)
If the responsibles for a game refuse to add an important feature, I don't waste my time on the game.	❍	❍	❍	❍	❍
If an essential feature takes lots of time to be implemented, I'll not be there when it happens.	❍	❍	❍	❍	❍
When a feature is promised, I expect to get it on time or I would stop playing.	❍	❍	❍	❍	❍
Too complex features would make me leave the game.	❍	❍	❍	❍	❍
A game needs to have intuitive features. Otherwise, I stop playing.	❍	❍	❍	❍	❍

Did you quit a game already due to in-game features?

❍ Yes
❍ No

Community (People with common interests that assemble together and interact with each other)

Please select for each sentence the option that most reflect your opinion. Don't forget that by "game" we refer to F2P MMOGs.

	(1)	(2)	(3)	(4)	(5)
When I feel that I don't belong to the community, I rather stop playing.	❍	❍	❍	❍	❍
A secure and fun environment on the community is essential for my continuation on the game.	❍	❍	❍	❍	❍
My relationship with my guild members affect my willingness to continue to play the game.	❍	❍	❍	❍	❍
When my in-game friends leave the game, I stop playing it.	❍	❍	❍	❍	❍
Community is an important element that affects my continuation on the game.	❍	❍	❍	❍	❍

Did you stop playing a game already due to community factors?

❍ Yes
❍ No

Support Team/Service (Responsible for collecting feedback, report technical errors, answer to player's questions and submit complaints)

Please select for each sentence the option that most reflect your opinion. Don't forget that by "game" we refer to F2P MMOGs.

	(1)	(2)	(3)	(4)	(5)
Having a team that shows lack of knowledge on the game, makes me leave the game.	❍	❍	❍	❍	❍
If the support team is not pleasant, I just leave the game.	❍	❍	❍	❍	❍
When there're proves of bad procedures on the support team, I stop playing the game.	❍	❍	❍	❍	❍
Lack of professionalism by the support team, makes me stop playing the game.	❍	❍	❍	❍	❍
The service provided by the support team is an important element that affects my continuation on the game.	❍	❍	❍	❍	❍

Did you quit a game already due to a bad service provided by the support team?

❍ Yes
❍ No

Game Fairness (Gap between premium and non-premium players)

Please select for each sentence the option that most reflect your opinion. Don't forget that by "game" we refer to F2P MMOGs.

	(1)	(2)	(3)	(4)	(5)
When features provide huge advantages for those who spend money, I would stop playing.	❍	❍	❍	❍	❍
If I feel that the game is providing unfair advantages, I would leave it.	❍	❍	❍	❍	❍
If the game is unfair and people in charge show no concern in solving it, I would leave the game.	❍	❍	❍	❍	❍
If the game doesn't provide a fair competition, I would leave it.	❍	❍	❍	❍	❍
When I cannot compete with premium players without spending money, I lose interest on the game.	❍	❍	❍	❍	❍
Game fairness is an important element that affects my continuation on the game.	❍	❍	❍	❍	❍

Did you stop playing already due to a lack of game fairness in the game?

- ❍ Yes
- ❍ No

Relation of Drop-out Factors with Game Fairness

Please select for each sentence the option that most reflect your opinion. Don't forget that by "game" we refer to F2P MMOGs.

	(1)	(2)	(3)	(4)	(5)
Game fairness and latency are equally important when deciding to leave a game.	❍	❍	❍	❍	❍
There's no sense on deploying new features that will make the game significantly unfair.	❍	❍	❍	❍	❍
I would continue to play an unfair game, as long as it has an engaged community.	❍	❍	❍	❍	❍
Having a great support team is way more important than the game's fairness.	❍	❍	❍	❍	❍

Importance of Drop-out Factors

What importance do you give to the following elements of the game when deciding to stop playing it?

	(1)	(2)	(3)	(4)	(5)
High latency/performance issues	❍	❍	❍	❍	❍
Too complex features/Features not being implemented	❍	❍	❍	❍	❍
Feeling of not belonging to the community	❍	❍	❍	❍	❍
Bad service provided by the support team	❍	❍	❍	❍	❍
Huge gap between premium and non-premium players	❍	❍	❍	❍	❍

Thanks for your answers! Please click on >> to submit it.

In case you have questions or suggestions, please send an email to mmo.masterthesis@gmail.com
Keep on playing!