

Making it Last: Towards Understanding Longevity in Computer and Video Games

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Abstract

Since the first digital games were made seven decades ago, games have become an important part of not only the entertainment industry, but also of the modern culture and contemporary society. It is only since 1990s that scholars have started to study the growing impact which games have on our economy, society and everyday life. However, little attention has been directed towards the issue of the longevity of computer and video games.

In the history of computer and video games, the emergence of countless games has been accompanied by the decline of countless games. However, Through observation of the emergence and decline of numerous game titles over years, we can see that the lifetime of individual titles can vary enormously from a few days to several decades. As a matter of fact, game developers, publishers, designers and game fans all hope that games can exist for a long time, whether because of commercial reasons or artistic (or cultural impact) reasons. Hence, we take the factors leading to the longevity of games as the focus of this paper.

In this study, a total of eight games with excellent longevity are selected as case studies, and these games are from a wide variety of genres and using three different pricing models in order to capture as many factors related to longevity as possible. In the process of analysis, qualitative data is generated through reference and discussion based on relevant materials and quantitative analysis is conducted by using game participation statistics from official game websites or and other providers of games, and IBM SPSS Statistics 25 is also used to ascertain factors affecting game longevity. After summarizing and analysing the results, it was found that there were ten different factors in the study cases, which contribute to longevity in games, among which in-game social aspects and ex-game community are two most frequent factors. Other factors are, according to the frequency of occurrence, episodic content, e-sport, gambling mechanics, strong story, support from players, institution potential, neurotic addiction, replayability and creativity.

The result of this paper is intended to provide a reference for the development and operation of games and also to serve as a starting point to help scholars and game designers understand how to improve game longevity.

Table of Contents

Introduction	1
Background and context.....	1
Why we need to understand longevity in games	2
Research question.....	5
Methodology	5
Document Roadmap.....	7
Chapter 2: Case Study of Three Retail Games.....	8
<i>Vampire: The Masquerade – Bloodlines</i> (2004).....	8
<i>Minecraft</i> (2011)	10
<i>Counter-Strike: Global Offensive</i> (2012)	13
Chapter 3: Case Study of Two Subscription Games.....	19
<i>World of Warcraft</i> (2004)	19
<i>Final Fantasy XIV</i> (2013).....	23
Chapter 4: Case Study of Three Free-to-play Games	27
<i>Maplestory</i> (2003).....	27
<i>League of Legends</i> (2009)	30
<i>Candy Crush Saga</i> (2012).....	32
Discussion.....	35
Conclusion and Future Work.....	39
Conclusion	39
Future work.....	39
Reference.....	41
Appendix 1	47

Table of Figures

Figure 2-1: VTMB Screenshot (Source: mobygames.com)	8
Figure 2-2: The Number of Monthly Average Player from Jul. 2012 to Apr. 2020 (Source: steamcharts.com)	9
Figure 2-3: The Downloads of Unofficial Patch 10.6 for VTMB between 14 April 2020 and 16 May 2020 (Source: moddb.com).....	10
Figure 2-4: Minecraft Screenshot (Source: minecraft.net)	11
Figure 2-5: CS: GO Screenshot (Source: sfx.thelazy.net)	13
Figure 2-6: Tests of Between-Subjects Effects (Source: IBM SPSS Statistics 25)...	15
Figure 2-7: CS: GO Jan. 2016 - Dec. 2019 Monthly Average Number of Online Players Histogram (Source: steamcharts.com and HLTV.org)	16
Figure 3-1: World of Warcraft Screenshot (Source: reddit.com)	19
Figure 3-2: World of Warcraft Official Subscriptions Data from November 2004 to November 2015 (Source: MMO-Champion)	20
Figure 3-3: Estimates and Forecasts for the Number of World of Warcraft Subscribers from 2016 to 2023 (Source: Statista)	21
Figure 3-4: Final Fantasy XIV Screenshot (Source: square-enix-games.com).....	23
Figure 3-5: The Number of Monthly Average Player from Feb. 2014 to Apr. 2020 (Source: steamcharts.com)	24
Figure 3-6: Monthly Active Players of Final Fantasy XIV from Jun. 2015 to Apr. 2020 (Source: MMO Populations).....	24
Figure 4-1: Maplestory Screenshot (Source: beitao8.com).....	27
Figure 4-2: League of Legends Screenshot (Source: gamingcfg.com).....	30

Figure 4-3: Candy Crush Saga Screenshot (Source: Pinterest) 32

Figure 5-1: The Genres and Pricing Model of Eight Games 35

Figure 5-2: Longevity Factors Matrix Table..... 36

Introduction

Background and context

For a product, consumers usually will not come to understand the whole process of this product from development and design to production and finally to exit the market. This process happens continually - taking products from their beginning introduction stages all the way through their decline and eventual retirement. The product life cycle is the process a product goes through from when it is first introduced into the market until it declines or is removed from the market. The life cycle has four stages - introduction, growth, maturity and decline (Raymond, 1966). For some reasons, some products can keep it maturity stage for a relatively long period, however, no matter how long this period is, due to saturation, increased competition, decreased demand, these products eventually withdraw from the market (Anne 2019).

Computer and video games as virtual products also have life cycles. In the history of the game, there are countless games, from which there are some games stay relevant longer than others. When we look back to PC games in the 80s and 90s, some of them still being updated and played today, such as *Genesis* (1989), *UnReal World* (1992) and *Ultima Online* (1997) (Christopher and Wes 2018). Maybe they are not as popular now as when they launched, but as a product, still in its life cycle. There are also some games released in the 1980s and 1990s, such as *Habitat* (1986) which no longer exists in the market. When the time comes to the millennium, there are games like *Minecraft*, which was officially released in November 2011 and seems only continue to get bigger; there are games like *Maplestory* (a free-to-play, 2D, side-scrolling MMORPG), launched in South Korea in 2003, has been through 17 years and still ranks at 6 in South Korea according to gametrics.com's statistics; and there are some games short-lived, such as an MMO (massively multiplayer online) game called *Chaos Saga* (2006), which existed less than one day.

Digital games are not the only type of games that are long-lived. Chess is a board game that has existed since it was created in 6th century and it still being played worldwide without any sign of dying out. Both chess and video games are man-made creations. For technical reasons, video games are relatively new compared to chess, no games now seem to have the longevity that chess has. But we may be in curiosity that if a game can last as long as Chess, what design features lie in chess make it long-lived to now and if these features could give video games some clues and inspirations to have longevity.

A digital game takes the form of a piece of software, but video games is not purely a product of pure engineering. The game also is not just pure art, a creation of creativity of imaginative thinking, but the game is more like a craft, created from the combination of interleaving, multidiscipline aspect, from art, music, programming, acting, and the management and integration of those aspects (Kanode and Haddad, 2009)(Adams 2009). So, these aspects may contain the characteristics that give a game good longevity.

Why we need to understand longevity in games

It is desirable for games to have longevity, whether for financial reasons, the expectations of the designers themselves, or the enthusiasm of the players. However, there is no formula for longevity. When we talk about game longevity, we have to talk about three types of pricing models, because different pricing models have different requirements on game longevity, and the game longevity has different effects on different game modes. So, before we talk about game longevity, we have to understand three type of pricing models, here briefly introduce three type of pricing models. They are, respectively, retail games, subscription-based games and free-to-play games.

In the retail pricing model, the game developer and the publisher collaborate. The game developer is responsible for developing games while the publisher takes care of the part of selling games and promotions. For customers, according to the different schemes of game developers, they either buy the game through virtual

transactions, then get a permit to download the game, or they purchase the physical cartridge, whether online or in a retail store. In both situations, the player has to buy the game, whether with the original price or promotional price. In this pricing model, players are more likely to follow recommendations from game websites and magazines or base on word-of-mouth. Apart from the original game itself, some games release small patch files and expansions afterward. Patch files are typically free, especially those used to fix errors in-game. Other patches and extensions to improve the game are sold the same way as the original game (Fields & Cotton 2012). Some representative retail games are Super Mario (1981), Tetris (1984), and FIFA International Soccer (1993).

For online games, game developers often need to pay server fees to maintain game operations, and the payment method is usually by month. This slowly spawned another pricing model: subscription game. In this pricing model, the customer pays game developers by time to get access to the game (Depending on the game, players can choose different payment schemes which include but are not limited to by day, by month, by half-year, by year, by quarter or by minutes). In this pricing model, like retail games, the customer sometimes has to buy a physical game disc, but most of the time, the customer downloads the game without charging and can have a free trial play. Since subscription games are always connecting to the server, patch files with error fixes can be loaded and installed automatically. Additional content can also be added to the server at any time, but larger content additions are often sold as separate expansions, either on a disc or as a digital download (Vankka 2014). *Neverwinter Nights* (1991), *Nexus: The Kingdom of the Winds* (1996) , and *World of Warcraft* (2004) are some examples of subscription games.

The free-to-play game is a relatively new model, it originated in the late 1990s implemented by a South Korean game company Nexon in *Quiz Quiz* (1999). It developed because developers and publishers found the commercial vulnerabilities in subscription and retail games. Under these two pricing models, the price paid by each player is the same. Only players who can afford this price will stay, then the game will lose those smaller transact and users who are willing to pay smaller and unwilling to pay. On the other hand, some players may be able to afford a price that

is higher than the price of the game or the subscription price of the game, so publishers will also lose this part of the profit. Of course, hardcore gamers can spend the money they are willing to spend through, for example, offline transactions, but if there is a model with several price points, it will be more efficient for game manufacturers (Hamari & Järvinen 2011). In addition, game developers see the benefits of free players. In the free-to-play model, not only can games be more efficient, but a considerable number of non-paying players can also keep the game active and attract new players. In this point, these free-to-play gamers are not real free-to-play, but contributors to the long-term development of the game. So, in the eyes of businessmen, free-to-play model can tap the potential of every consumer. But sometimes, the free-to-play model would go with the fame of unfair, imbalance and ruining the game experience.

In the free-to-play model, the client of the game is provided to players for free, and the game company makes money by selling virtual products in the game or placing advertisements (Vankka 2014). Now, free-to-play has been used on all kinds of platforms such as PC, mobile, tablet and gaming consoles and multiple game genres. Unlike paid games or paid home console games, free-to-play games are usually released as incomplete versions and are updated regularly after release. It can be adjusted and updated based on the feedback from players and the market after release, which makes free-to-play games very flexible. Some representative free-to-play games are *Maplestory* (2003) and *Dungeon Fighter Online* (2005).

According to data from Appfigures.com (2016), 92% of games on the Google Play platform are free-to-play. According to SuperData Research (2017), the free-to-play PC gaming market generated \$ 19 billion in revenue in 2016 and will grow 12% from 2018 to 2022. On PC and Xbox 360, *Team Fortress 2* (2007), was first launched as a bundled product with The Orange Box as a retail game in 2007, and announced to be free to play on 2011, which resulted in its revenue from it had increased by twelve during 9 months (Miller 2012).

Based on the characteristics of these three pricing models, we can conclude that because of the difference in the pricing model, players are required to complete a

one-time purchase before starting to play retail games, so this model of games does not have a high demand on the game longevity. In the subscription model and free-to-play games, the revenue of the game is closely related to the life span of the game, and these two types of games are more dependent on the life span of the game.

Research question

This aim of this research paper is to explore the topic of longevity in games and attempt to identify game design characteristics and other aspects that can help contribute to a game retaining popularity over a long period. There are several pertinent facets to this question. As there are three main type of pricing models, we must first figure out how these three pricing models work and the relationship between these three pricing models and game longevity.

Secondly, after the case studies, when looking at the longevity factors we found, if we draw a conclusion that there are some longevity factors work for the same genres of games or some longevity factors can work for most of the genres of games.

Through analysis different models of games and different genres of game, we hope to summarize some special game design characteristics and other aspects that can help contribute to a game retaining popularity over a long period. In line with this, addressing some sub-issues by analysing these longevity factors.

Methodology

In order to explore the topic of longevity in games and attempt to identify game design characteristics and other aspects that can help contribute to a game retaining popularity over a long period, we chose eight games which are relatively long-lived games, all released before 2013. Because there are three different types of pricing models, here we choose three retail games: *Vampire: The Masquerade – Bloodlines* (2004), *Minecraft* (2011) and *Counter-Strike: Global Offensive* (2012); two subscription games: *World of Warcraft* (2004) and *Final Fantasy XIV* (2013); three

free-to-play games: *Maplestory* (2003), *League of Legends* (2009) and *Candy Crush Saga* (2012) as case studies. These eight games were chosen for this research paper is because they differ considerably in genre, price model and (as we will see), the type of longevity they have and the way in which they achieve it. *Vampire: The Masquerade – Bloodlines* is a single-player action RPG, *Minecraft* is a sandbox game, *Counter-Strike: Global Offensive* is a multiplayer FPS game, *World of Warcraft* is an MMORPG, *Dragon Quest X* is an MMORPG, *Final Fantasy XIV* is an MMORPG, *Maplestory* is an MMORPG, *League of Legends* is a MOBA game, *Candy Crush Saga* is a match-three puzzle game. Because most subscription games are MMORPGs and we picked an MMORPG in the game model of free-to-play, to avoid duplication we only selected two subscription-based games for analysis. Therefore, in total, six genres are included. Besides, all these eight games have been released in their respective fields for at least 7 years or even longer and are still popular to some extent.

To carry out the case studies, we will use four main methods. First, game analysis techniques from Jesse Schell. His analytical approach divides the game into four parts: story, technology, aesthetics and mechanics. This way may help to get which part is the most impressive part in a game and then which part lies with longevity factors.

Second, we will use IBM SPSS Statistics 25 to testify the significance between longevity and some data, which will contribute a more objective assessment to measure if some longevity factors are reliable.

Then, we will look at what type of engagement in different games is from players. Using game participation statistics from official game website or some provider of games and esports analytics as quantitative evidence.

Document Roadmap

In Chapter 2, this paper will analyse longevity factors from three retail games: *Vampire: The Masquerade – Bloodlines* (2004), *Minecraft* (2011) and *Counter-Strike: Global Offensive* (2012).

Chapter 3 will analyse longevity factors from three subscription-based games: *World of Warcraft* (2004), *Dragon Quest X* (2012) and *Final Fantasy XIV* (2013).

Chapter 4 will analyse longevity factors from three free-to-play games: *Maplestory* (2003), *League of Legends* (2009) and *Candy Crush Saga* (2012).

Finally, Chapter 5 will conclude longevity factors from eight games and present an analysis of these longevity factors.

Chapter 2

Case Study of Three Retail Games

In this chapter, we will analyse three representative titles from games that fall into the category of retail games, meaning that they are games that would be purchased and typically do not require further purchases, which means they do not have subscription fees or ads. The three games are *Vampire: The Masquerade – Bloodlines* (2004), *Minecraft* (2011) and *Counter-Strike: Global Offensive* (2012). We are covering them in chronological order.

Vampire: The Masquerade – Bloodlines (2004)



Figure 2-1: VTMB Screenshot (Source: mobygames.com)

Vampire: The Masquerade – Bloodlines (2004) (later called VTMB) is a single-player action role-playing video game developed by Troika Games and published by

Activision for Microsoft Windows. The background of the game happened in Los Angeles in the early 21st century, the player wakes up in an unfamiliar room and being transform into a vampire. As a fledgling vampire, the player gradually finds some unknown truth about all vampires. On the one hand, it is carried along by highly acclaimed writing, brilliant facial animations and gameplay mechanics which are admired by its followers. On the other hand, it is famous for its rushed release and turbulent production. The game was being developed since November 2001, and the team went through a couple of obstacles, such as the development team shut down for a year due to run out of available resources. Finally, *VTMB* was forced to release in 2004 as an incomplete game because no more budget was added to its development. Compared to contemporaneous games, such as *Half Life 2*, *VTMB*'s sales performance was disappointing with only 80,000 copies during its initial release. Even though Troika Games tried to patch *Bloodlines*, the company closed in February 2005 due to lack of capital, which left *Bloodlines* with many bugs. Now after 16 years of its release, when we look at its official Steam statistics, *Bloodline* is still being played by a considerable amount of people every day (see figure 2-2). Compared to *CS: GO*, longevity in *VTMB* has different expressions, including a much smaller player base. Generally, people tend to look at large games to understand game longevity, but it is also interesting to know how this small scale of longevity exists.

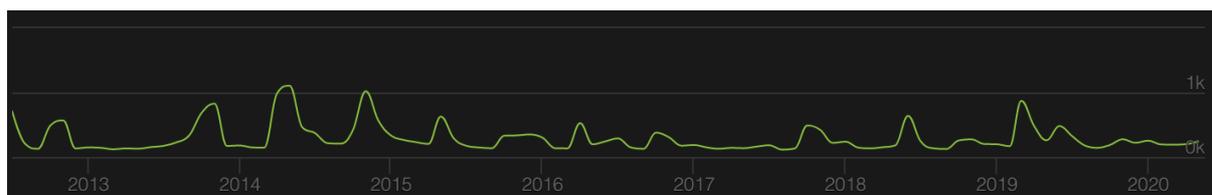


Figure 2-2: The Number of Monthly Average Player from Jul. 2012 to Apr. 2020 (Source: steamcharts.com)

The most important reason that helps build longevity in *VTMB* is perceived as support from fans. After Troika Games closed, the game's fans tried to address its technical problems, and restore missing and incomplete content and created unofficial patches for the game. As of 2020, the game's players have spontaneously updated the game for 16 years, and there is no intention to stop. Among the patches

they released, version 9.x was also added to the officially released version of GOG.com. The newest unofficial patch is version 10.6 which was released on 17 Feb. 2020 and renewed on 14 Apr. 2020 by Wesp5 on moddb.com. There are hundreds of players downloading version 10.6 patch every day (see figure 2-3). Besides, both in nexusmods.com and moddb.com, Wesp5 and the VTMB unofficial patch crew give prompt replies to players' questions. Without the support of its fans, VTMB can be hard to survive with uncomplete functions and lots of bugs.



Figure 2-3: The Downloads of Unofficial Patch 10.6 for VTMB between 14 April 2020 and 16 May 2020 (Source: moddb.com)

Minecraft (2011)

Minecraft (2011) is an open-ended sandbox game designed by Markus Persson and published by Mojang, where players can build constructions with different textured cubes in a pixel world. There are three different modes of game play for player to choose: Creative Mode, Survival Mode, and Adventure Mode. In the Creative Mode, players do not need to worry about the life-threatening hazard. It is like a pure mode where players have access to all kinds of resources without any limitations, such as all the materials are free to use, no need to craft, besides, players can change the time and weather as they want. Survival Mode is different from Creative Mode; in this mode, players have to earn resources themselves and have to resist various threats, such as building shelters during the night to avoid monsters. Adventure Mode is like a combination of Creative Mode and Survival Mode, Players have the right to set

limitations to the game world, and in the world, all the players have to obey those rules. Only the correct tools can destroy specific cubes. Besides, people also need to protect themselves from attacks. Although there are three different modes here, player can design buildings with their imagination. Among these three modes, Survival and Adventure Modes are the most popular modes. Creative Mode as the freest mode, is the best option for people who want to focus on building their creations. In addition, the game allows players to log in independently and work alone or log into a server for multiplayer play.



Figure 2-4: *Minecraft* Screenshot (Source: minecraft.net)

Minecraft has since been ported to various platforms such as Windows, OS X and Linux and is the best-selling video game of all time, with over 180 million copies sold across all platforms and over 112 million monthly active players by 2019. Although it has been on the market for many years, the revenue of *Minecraft* has kept increasing year by year. *Sensor Tower* data shows that the revenue of this sandbox game in the App Store and Google Play reached a new high in 2018, and its mobile downloads and in-app purchases brought Microsoft more than 110 million in revenue. Compared with 2017's revenue of \$103 million, the annual growth rate is 7%. According to *Business Insider's* phone interview with *Minecraft* studio head Helen Chiang in

September 2019, *Minecraft* now has 112 million monthly active players, an increase of 21 million from last year. Here we attempt to identify its game design characteristics and other aspects that help contribute to *Minecraft*'s retaining popularity since it was tested in 2009 and officially released in 2011.

First, *Minecraft* has great replayability and allows the expression of creativity. For replayability, in its game design, *Minecraft* uses Procedural content generation (PCG) to provide players with varied content and randomness for less predictable gameplay, which helps to lead to drastically different play experiences (Smith, Gan, Othenin-Girard & Whitehead, 2011). In this way, players can constantly explore the map. Games can also bring novelty and challenge to players, such that player do not get bored with the repetitive setup and quickly turn to other games. For creativity, as there is no specific goal in the game, players are encouraged to explore the game world freely and build whatever they want in the game. It can be a simple shelter; it can be the Taj Mahal; it can be things that do not exist. there are endless structural possibilities. It all depends on the players. Players can fully exert their imagination.

Second, *Minecraft* has a massive social engagement outside the game. First of all, there are no instructions or tutorials provided by *Minecraft* official, which leads to the emergence of a large number of how-to videos and post on various social media platforms such as YouTube. In this way, players acquire knowledge of how to play the game through peer teaching. Besides, *Minecraft* gamers' creativity resulted in many excellent works; these works were published on various social platforms, such as YouTube, Facebook, and Reddit. These good works not only including the creative design work and walkthroughs of multiple tasks and parodies of jobs in popular culture. Only on YouTube, *Minecraft* related content reached 436B views, and 5M *Minecraft* - related videos have had been uploaded to YouTube to date. In 2018 alone, around 311K user-generated *Minecraft* YouTube videos pulled in a total of 45.1B views. In 2015, *Minecraft* was one of the most-searched terms on YouTube, and it ranked first in search of the categories of games on the platform (Bree, 2019). The development of social platforms provides a base for players. Still, the publicity they generate from the considerable traffic they generate also translates into new user growth, which can also be seen as a reason why *Minecraft* has longevity.

The most special reason that Minecraft is so popular and has longevity is its educational application. Minecraft has been widely believed as valuable as a teaching aid due to its open and well-supported. In 2011, An educational institute called MinecraftEDU was formed. The version of Minecraft through MinecraftEDU includes unique features to allow teachers to monitor the students' progress within the virtual world, such as receiving screenshots from students to show completion of a lesson (Jody, 2019). In September 2012, MinecraftEDU announced that approximately 250,000 students worldwide have access to Minecraft through the company. Besides, MinecraftEDU has developed a wide variety of educational activities by involving the game which are useful for teaching history, language arts, and science. With this particular application, the school will continue to input new users into Minecraft to keep the game active. Which could make the game retain popularity and have longevity. And because of participating in teaching, Minecraft is believed to keep maintaining for a considerably long time.

Counter-Strike: Global Offensive (2012)

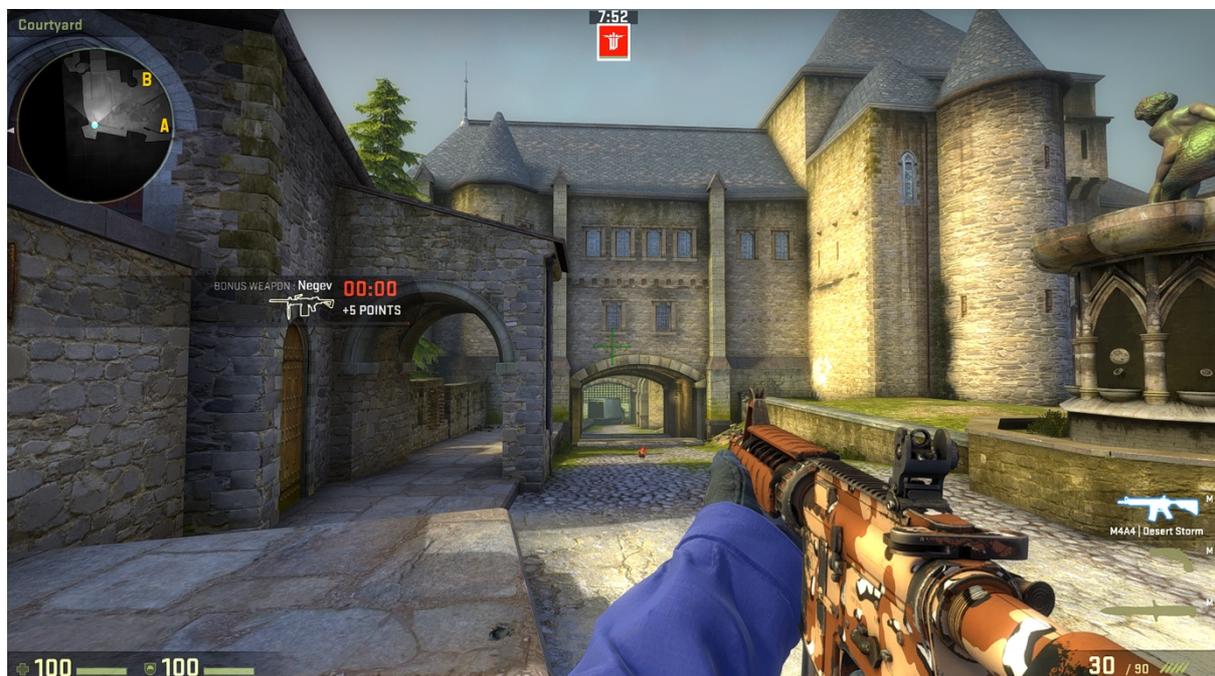


Figure 2-5: CS: GO Screenshot (Source: sfx.thelazy.net)

Counter-Strike: Global Offensive (2012) (later called CS: GO) is a multiplayer and team-based first-person shooter video game developed by Valve and Hidden Path

Entertainment. When it comes to *CS: GO*, we have to first talk about *Counter-Strike (2000)*. *Counter-Strike* was initially a mod for *Half-Life (1998)* developed and released by Minh "Gooseman" Le and Jess Cliffe in 1999. By the fifth beta, Valve Software started actively participating in the development and ultimately bought the rights to the game and offered the original developers jobs at the company which both of them accepted (Counter-Strike n.d.). After further development, *Counter-Strike* was officially launched on Microsoft Windows in 2000. Since the creation of the franchise, various sequels and spinoffs have been created, such as *Counter-Strike: Condition Zero*(2004), *Counter-Strike: Source*(2004), *CS: GO*(2012), *Neo*(2003), *Counter-Strike Online*(2008), *Counter-Strike Online 2*(2013), *Counter-Strike Nexon: Studio*(2014)(Counter-Strike n.d.). Among them, some sequels and spinoffs are out of market now, such as *Counter-Strike Online 2*, all of its servers were forced to shut down on 26 April, 2018 after 4 years of service (Counter-Strike Online 2 n.d.) In contrast, *CS: GO* now is one of the most popular and successful PC games in the world. The statistics in Newzoo.com show that in April 2020, *CS: GO* ranked third on the list of Global Most Popular Core PC Games (Most Popular Core PC Games 2020). Eight years after *CS: GO* released, a relatively long time for a computer game, it still captures and holds players' interest. According to official Steam statistics, *CS: GO* hit one million concurrent players for the first time in its history on 14 March 2020 (Wesley 2020). In this session, we try to identify what game mechanics and features make *CS: GO* have longevity.

The first reason we consider is because of esports. Since the 1990s, with the development of home computers for video games, many types of video games emerged. With the rapid development of the world's game industry, a new competitive sport esports came into being. As one of the first games to develop esports, *Counter-Strike (2000)* laid the foundation for the development of *CS: GO*. Now *CS: GO* has a relatively complete esports system, consisting of various levels of events. Current main events of *CS: GO* can be roughly divided into S-Tier Events and A-Tier Events, B-Tier Events and C-Tier Events (Liquipedia n.d.). S-Tier Tournaments (formerly known as Premier Tournaments) offer an outstanding prize pool, are almost exclusively played offline, and feature the best teams from all over the world. They are commonly held by well-established organizers and are

considered especially prestigious amongst the community (S-Tier Tournaments n.d.). A-Tier Tournaments (formerly known as Major Tournaments) feature a large prize pool and a good number of top-tier teams (A-Tier Tournaments n.d.). B-Tier Tournaments is a new tier featuring smaller LAN events and larger online events with top tier 2 teams (B-Tier Tournaments n.d.). C-Tier Tournaments (formerly known as Minor Tournaments) are the lowest ranked events, almost always played online with no top teams participating (C-Tier Tournaments n.d.). To verify the hypothesis that there is correlation between CS: GO's esports and its longevity, we select two representative games in S-Tier Events, which are the CS: GO Major Championships and BLAST Pro Series (ceased in December 2019 and replaced by BLAST Premier), and monthly average number of online players from official Steam statistics as our samples(See appendix A).

Tests of Between-Subjects Effects			
Dependent Variable: Monthly average players			
Source	df	F	Sig.
Corrected Model	2	3.754	0.031
Intercept	1	2157.518	0
Number of events	2	3.754	0.031
Error	44		
Total	47		
Corrected Total	46		

a.R Squared =0.146 (Adjusted R Squared=0.107)

Figure 2-6: Tests of Between-Subjects Effects (Source: IBM SPSS Statistics 25)

To analyse the impact of the event holding on the average monthly online players, the monthly average simultaneous players were used as the dependent variable, and one-way ANOVA was used to obtain a significance of 0.031 ($P < 0.05$) which indicates that the holding of these two representative events has a certain impact on the average number of online players per month(Figure 2-6).

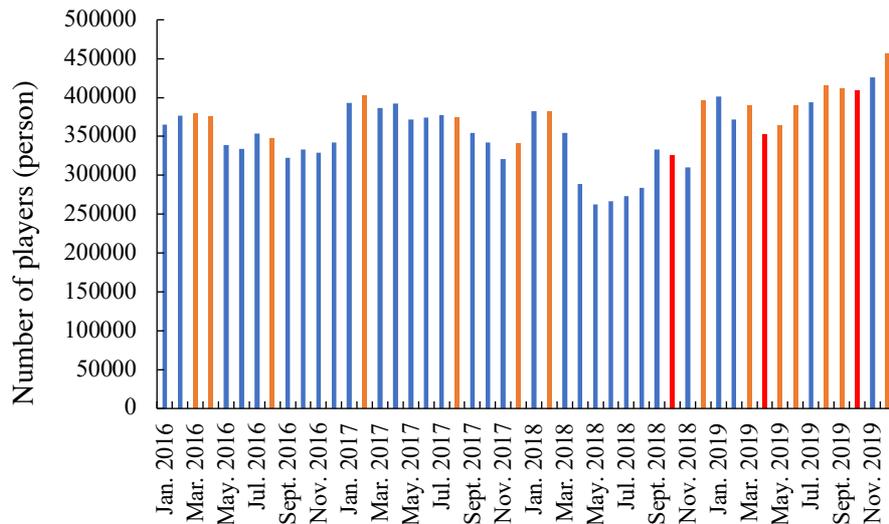


Figure 2-7: CS: GO Jan. 2016 - Dec. 2019 Monthly Average Number of Online Players Histogram (Source: steamcharts.com and HLTV.org)

According to Figure 2-7, from January 2016 to December 2019 CS: GO monthly average number of online players changes with time, the lowest value of monthly average online number appears in May 2018, which is 262170.9, the highest value of the average number of online users is 456701.6 in December 2019. Among them, orange represents that one major event occurred in the month, and red represents two major events occurred in the month. It can be seen from the figure that the month in which the event is held basically appears at a peak for a certain period of time and affects the data for the adjacent months. The contrast between April 2018 to August 2018 and the whole year of 2019 is especially distinct. From April 2018 to August 2018, because there are no major events, monthly average online number is at a relatively low level. When there are basically major events every month in 2019, monthly average online number is at a high level.

In addition, February 9, 2020 was the first time CS: GO has witnessed more than 900,000 concurrent players. Last time the game witnessed such a massive surge was back in April 2016 during the MLG Major Championship: Columbus 2016 (Aditya 2020). It is speculated that high volume of concurrent payers is because of the start of the Group-B of BLAST Premier: Spring 2020 Regular Season (Aditya, 2020).

Besides, according to Newzoo's consumer research survey result, now gamers can be divided into eight personas, which are the Ultimate Gamer(13%), the All-Around Enthusiast(9%), the Cloud Gamer(19%), the Conventional Player(4%), the Hardware Enthusiast(9%), the Popcorn Gamer(13%), the Backseat Viewer(6%) and the Time Filler(27%). In these eight personas, there are three personas that mainly watch others play, they are the Cloud Gamer (19%), the Popcorn Gamer (13%), and the Backseat Viewer (6%), which account for 38% in the total. This is a considerable large number compared to the whole group of gamers, which means that there is a big market for esports, and this group can generate huge impact on the game.

For all these reasons, we can conclude that esports is one important factor that contribute to the longevity of CS: GO.

In addition to esports, there is a special mechanics in CS: GO that has been confirmed has something to do with longevity. That is skin gambling mechanics. Players need to spend a small amount of money (\$2.49 in the U.S.) to purchase a key in the in-game store to open a weapon case. After unboxing cases, players randomly get a skin. Different skins have different opening probability. This mechanics was not an initial mechanic along with CS: GO when it was launched in 2012. It was added to the game in August 2013. Seven months after, the users of the game gained sixfold increase compared to the number a year earlier (Shaun 2018).

Although there are several ways to get weapon cases, the most common way is by playing the game and get it dropped randomly after the game, which means that people who want to satisfy their gambling desire have to keep playing the game. That is one of the reasons why its monthly average player number is relatively stable, and the users of the game increased after skin gambling mechanics was introduced.

The price of some rare skins is highly sought- after by players because of the vigorous pursuit of players. Now these skins became a form of virtual currency. and it can be accessed and transferred through the Steam Marketplace. In its Steam

community, the number of Trading topics is 799,863(Statistics from steamcommunity.com on 11 May 2020), which ranks only second to General Discussions. Due to its transaction amount limit (\$400), the high transaction fee (15%) and no cash out principle (people who sold their skins cannot transfer their credits in Steam to real money) (Samit 2016), some people see business opportunities and create websites using the Steamworks application programming interface(API) to link players' inventory to these sites as to manage the trading. In this way, not only people interested in FPS games play this game, more people are engaged in this game because it being a lucrative profession.

The third thing that helps *CS: GO* keep longevity is because it has social aspects both inside the game and outside the game. As a team-based game, in the game, players are to be inspired to collaborate and to cooperate, they are encouraged to achieve the same goal, which made a large number of gamers addicted to the game, they feel they are not alone. That is what Gamer designer Jane McGonigal said game can bring people the characteristic – social fabric. Outside the game, when gamers they are not playing the game, they can still connect to the game. There are official Steam forums, according to different purposes, they can be divided into General Discussions, Looking for Players, Workshop Discussions, Trading, Events & Announcements. Only for General Discussions, there has been 1,426,839 topics (Statistics from steamcommunity.com on 11 May 2020). Besides its official community, players spontaneously form communities on various social platforms, such as Facebook, YouTube and Reddit. The biggest group in Facebook has 234K members. As a result, all these communities contribute to users' stickiness to the game then influence its longevity.

Chapter 3

Case Study of Two Subscription Games

In this chapter, we will analyse two representative titles from games that fall into the category of subscription games, meaning that they are games that the customer needs to pay a subscription fee according to time and may need to purchase separate expansions. Generally, subscription games do not have ads. The two games are *World of Warcraft* (2004), *Final Fantasy XIV* (2013). We are covering them in chronological order.

World of Warcraft (2004)



Figure 3-1: *World of Warcraft* Screenshot (Source: reddit.com)

World of Warcraft (2004) is a real-time strategy MMORPG developed by Blizzard Entertainment and released in 2004. *World of Warcraft*, like the previous *Warcraft* series, is set in the *Warcraft* fantasy universe. In *World of Warcraft*, players must choose to take part in one of two opposing factions: The Alliance and the Horde.

Aside from traditional player versus environment (later called PvE) mechanisms in MMORPG, *World of Warcraft* also offers player versus player (later called PvP).

Even though *World of Warcraft* has been on the market for 16 years, it still ranks at 16 in most popular core PC games in the world (Most Popular Core PC Games 2020). Compared to most of games in the ranking, such as *Legends of Runeterra* (2020), *Fortnite* (2017), *Dota 2* (2013) and *Grand Theft Auto V* (2013), *World of Warcraft* is much older and long-lived.



Figure 3-2: *World of Warcraft* Official Subscriptions Data from November 2004 to November 2015 (Source: MMO-Champion)

Here are some data facts on *World of Warcraft*. According to the announcement of Blizzard Entertainment, on 22 January 2008, *World of Warcraft* had hit 10 million subscribers worldwide (Leigh 2008). As a subscription game, Blizzard defines subscribers as players who have paid a subscription fee or have an active prepaid card to play *World of Warcraft*, as well as those who have purchased the game and are within their free month of access. It does not count people who have free promotional subscriptions, expired or cancelled subscription or repaid cards (Leigh 2008). In October 2010, the game arrived it peak with 12 million subscribers (Matt 2013). By August 2011, that figure fell to just over 11 million (Matt 2013), and in November 2014, it still held over 10 million active subscribers (Philip 2014). On 7 May 2015, subscriptions were down to 7.1 million (Gergo 2015). On 2 November 2015, Activision Blizzard revealed subscribers at 5.5 million on its financial earning report for the third quarter and will stop reporting on number of subscribers in future earnings releases (Mike 2015). Instead, we found the estimates and forecasts for the

number of subscriptions from Statista (see figure 3-2) and annual revenue of the game. From the chart (see figure 3-3), we can see that predicted number of subscriptions are expected to show a downward trend. However, the figure in 2019 is still over 5 million. So, we can still define it as a long-lived and popular game.

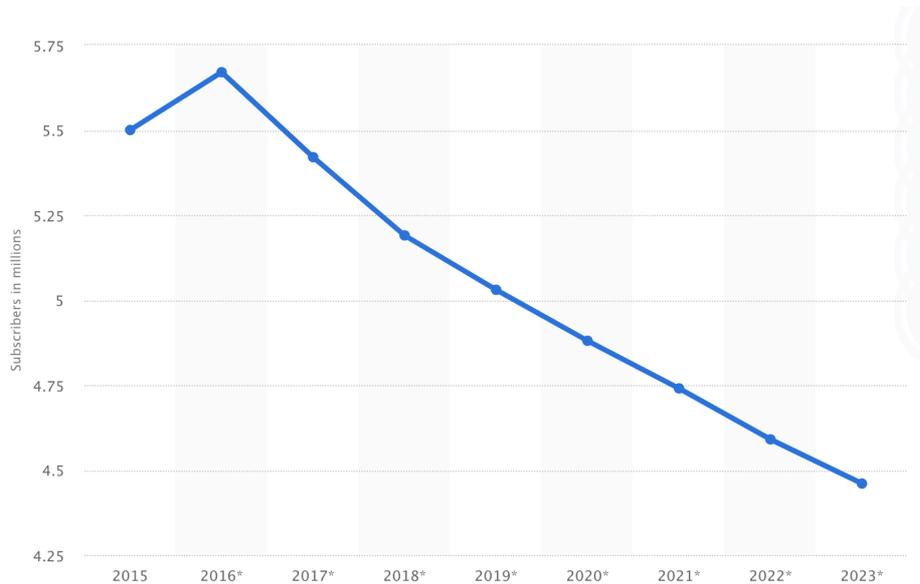


Figure 3-3: Estimates and Forecasts for the Number of *World of Warcraft* Subscribers from 2016 to 2023 (Source: Statista)

A large part of *World of Warcraft's* longevity is the new episodic content that Blizzard continues to release. The game has had seven expansions so far, and a new one will be released in Q4 2020. These expansions work as different function in the life cycle of the game. From the early stages of game development, during the era of *The Burning crusade* (2007-2009) and *Wrath of the Lich King* (2009-2011), extensions helped the game to experience the highest level of activity. In the down phase of the game, the company shifted the development of world of warcraft towards more frequent expansions (Mike 2015). The aim of expansions in this period, such as *Legion* expansion, was to bring lapsed players back into the game and keep players engaged longer. Besides, according to Blizzard, most of core player had aged out of consistent play, which is why people see the subscriber spikes around expansions. More frequent expansions keep those players in the fold (Mike 2015).

The second reason is that different forms of social interaction among players help keep the game active. In the game world of *World of Warcraft*, like most MMORPGs, players can interact with others in many ways, including chatting, trading; players can choose team members and find like-minded others. Once a player forms a close-knit relationship with a person or group of people, the player will have a sense of identity and being needed, which bring players back into the game constantly and keep player engaged longer. In addition, the social attribute of the game brings another interesting phenomenon. According to Bonnie Nardi and Justin Harris's research, *World of Warcraft* promotes offline social connection between people (Nardi & Harris 2006). Friends who live in different cities, by playing World of Warcraft to maintain friendship. Some people use a voice chat program to talk while they are playing the game to get the feeling that they are in the same room.

Apart from the in-game social aspects, World of Warcraft has a very strong community culture outside the game which enhances user engagement a lot and contributes to the game longevity. In addition to conversing on discussion forums provided by Blizzard, World of Warcraft players created plenty of fansites. This behavior is supported by Blizzard Entertainment. Even before the release of Wrath of the Lich King (an extension of World of Warcraft), Blizzard launched a program called the Blizzard Fansites Program. This program is for fan sites to be officially recognized as an open list (Blizzard Fansites Program n.d.). WowInsider.com and Nation Geography of Azeroth (later called NGA) are two of the most famous and largest fan sites in the list. As of 12 July 2014, the number of NGA registered members has reached nearly 20 million, the forum has over 4 million posts, the number of replies is over 33 million (National Geographic Azeroth n.d.). In these communities, players are encouraged to post all kinds of topics such as literary novels, painting creation, art carving, music production, video production, creative sharing, etc. This community culture brings fans with a sense of dependence and belonging, at the same time, the connection between the player and the game is closer.

Final Fantasy XIV (2013)



Figure 3-4: *Final Fantasy XIV* Screenshot (Source: square-enix-games.com)

Final Fantasy XIV (2013), known as *Final Fantasy XIV: A Realm Reborn*, is a MMORPG developed and published by Square Enix. Before the release of it, there is an original 2010 version of *Final Fantasy XIV* (2010) which is shut down because of a negative response from players for its incomplete game world. It was not until 2012 that the new version was launched to make this game go to the normal development path. Unlike the original 2010 version, the game released to largely positive reception. In 2013, *Final Fantasy XIV* earned Joystiq's Massively's 2013 Awards for Best New MMO of the year and was named the best MMO of the year by *Game Informer* and ZAM (Bree 2013) (Matt 2014) (Cyliena 2013). In 2014, it won the Award for Excellence at the CESA's JAPAN GAME AWARDS: 2014 (Games of the Year Division Grand Award 2014). In 2019, *Final Fantasy XIV* was nominated for Best Ongoing Game at E3 2019 Game Critics Awards (Stephany 2019) and for Evolving Game at the 16th British Academy Games Awards (Keith 2020) and won the award for Excellence in Multiplayer at the 2020 SXSW Gaming Awards.

Final Fantasy XIV has not only won many prizes. The game launched on the Steam platform on February 14, 2014 and the statistics on Steam Charts (see figure 3-5)

shows that the average monthly population volatility rise. The game is available on most mainstream platforms which include PC, PlayStation 3, macOS, PlayStation 4. According to MMO Populations, monthly active players count on all the platforms is also showing an upward trend (see figure 3-6). In the next session, we are going to analyse what factors make the game long-lived and keep popular.

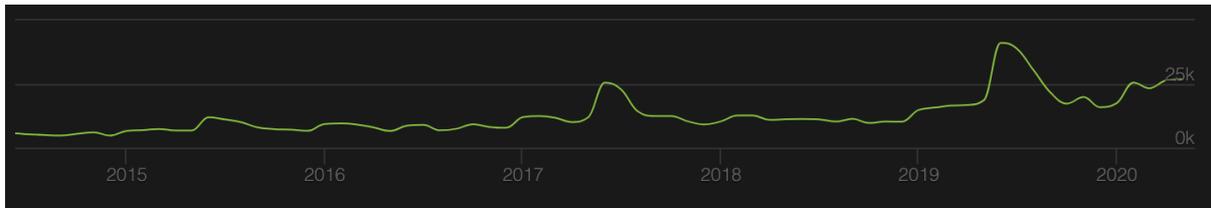


Figure 3-5: The Number of Monthly Average Player from Feb. 2014 to Apr. 2020 (Source: steamcharts.com)

Active Players Over The Last 5 Years

HISTORICAL POPULATION CHART

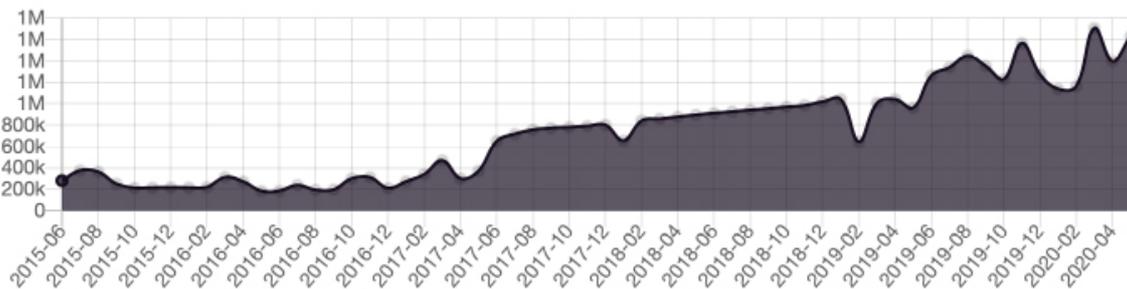


Figure 3-6: Monthly Active Players of *Final Fantasy XIV* from Jun. 2015 to Apr. 2020 (Source: MMO Populations)

The first of the reasons why *Final Fantasy XIV* have popularity and longevity, like *World of Warcraft*, is because of the new episodic content. Because of the characteristics of the MMORPG game, maps and plots are limited. Once the player can no longer continue to explore new content, the player may be away from the game. As the game grew, *Final Fantasy XIV* regularly released some patches and expansions to maintain the novelty of the game. After the game was released in August 2013, the development team released a major update on average every three months, which lasted until March 2015. A total of 5 patches were made to the

game. After that, the extensions were released every two years. It should be noted here that the patch package is free, while the extensions are charged. Generally, free content patches include a continuation of the main scenario as well as new raids, features, trials, and dungeons. Full expansion packs that add new zones, races, jobs, and premiere a new content cycle (Joseph 2015). *Final Fantasy XIV* has even attracted more attention because of the release of extensions. For example, the extension *Stormblood* earned the award for Best MMO at *Game Informer's* Best of 2017 Awards (Game Informer 2018). The extension *Shadowbringers* won the award for Best Online Game at the Famitsu Dengeki Game awards 2019 and was nominated for Best game expansion at the 2019 Golden Joystick Awards (SATO 2020) (Stephen 2019). The good reputation of the expansions usually brings some players. According to the survey, some players will join the game because of the high rating of the expansion on Metacritic. In addition to this, the release time of the three extensions has shown to be related to the number of players. For the first extension which launched on 23 June 2015, according to figure 3-6, the number of monthly active players has a small peak from June to August. Figure 3-6 shows a data boost around June 2017, which is the time that the extension *Stormblood* was released. After this time, its monthly active players growth tends to be stable. During the time when the extension *Shadowbringer* (2 July 2019) was released, the data also rose slightly.

Second, the great story in the *Final Fantasy XIV*. The story in the *Final Fantasy XIV* has received much critical acclaim on Reddit, GameFAQs, Steam, IGN and NeoGAF. For example, in a discussion of "What makes *Final Fantasy XIV* so great?" in Reddit, a user called Limsa says "Everything, from the main story to side quests to characterizations, is very well-written and engaging overall. The writers do a great job of keeping you interested in the narrative and the characters - this is one of the only MMOs where the story is what I look forward to the most with each patch/expansion." This is not the only comment saying this, actually, a large number of players back into the game because of the new patches and expansions come with new stories.

Finally, the social aspects inside the *Final Fantasy XIV* is another important factor contribute to its longevity. As a MMORPG, *Final Fantasy XIV* has almost every in-game social mechanics other MMORPGs have. What makes *Final Fantasy XIV* special is the harmony brought by the game mechanics and its game model type. First of all, the game is subscription based and 16+ which help to create a mature atmosphere in the game. Secondly, there are no opposing factions in the game world (like Horde and Alliance in *WoW*) and PvP in *Final Fantasy XIV* is not a core mechanic of the game and it is not like typical PvP. This keeps a large number of the PvP oriented people and some bad behaviors out, which greatly improves the game atmosphere and player interaction. These are not to say that other pricing models, PvP, and the opposing factions are not good, but without these points seems to create a different virtual community.

Chapter 4

Case Study of Three Free-to-play Games

In this chapter, we will analyse three representative titles from games that fall into the category of free-to-play games, meaning that they are games that the customer does not need to pay a subscription fee or buy. Generally, free-to-play games would place ads or sell virtual products in the game, and they are often released as incomplete versions and are updated regularly. The three games are *Maplestory* (2003), *League of Legends* (2009) and *Candy Crush Saga* (2012). We are covering them in chronological order.

Maplestory (2003)



Figure 4-1: *Maplestory* Screenshot (Source: beitao8.com)

Maplestory (2003) is a 2D, side-scrolling massively multiplayer online role-playing game (MMORPG), developed by Wizet and published by Nexon. This game launched in South Korea in 2003, has been through 17 years and still ranks at 6 in South Korea according to gametrics.com. In MMO Population, the statistics show

that *Maplestory* is ranked 16 out of 129 tracked MMOs for player population and in the top 16 of the leaderboard, *Maplestory* is the earliest game released.

As a MMORPG game, the presence of virtual communities in the game contributes considerably to its longevity. Community is the best guarantee to increase the game's stickiness (Ke 2013). The word "stickiness" is widely used in games, especially social games, but it also applies to online games in general. It is usually expressed as a user's reuse rate, loyalty and dependence on a certain game, which is the key data to evaluate the life cycle of a game (Ke 2013). To be specific, the most important feature in the characteristics of the community is interpersonal interaction. People should be attracted to spend in-game time together for variety of reasons, such as interests and hobbies, then generating a kind of relationship between each other. The user is like a close-knit molecular structure, attracting other molecules one by one, and being firmly attracted by other molecules. On the one hand, the formation of the community continues to absorb other players. Studies have shown that when friends invite you, there is a kind of implicit compulsion and restraint, which drives them to continue playing. On the other hand, the community can continue to keep existing users to stay in it. Even if the player has lost interest in the game, the player is likely to stay in the game, because they value more about the friendship or other emotions with other players in the game, and that bond forces the player to stay in the game. In the game world of *Maplestory*, players can interact with others in many ways, including chatting and trading. Groups of players can band together in parties to hunt monsters and share rewards. If players are tired of hunting, the game offers two type of minigames (Gomoku and match cards) inside the game for players to have a relax. Moreover, *Maplestory* offers plenty of important team tasks to facilitate the creation of a bond between players. Once there is a certain number of like-minded people gather together, there is a guild system and marriage system that people can use in the game to interact more easily with each other. In *Maplestory*, all its in-game social techniques enhance the forming of virtual community and make contribution to its longevity.

The second longevity factor of *Maplestory* is considered as it keeps coming up with new episodic content. According to Nicholas Lovell's design rules for free-to-play games, if a game cannot provide players with enough enjoyment and great

experiences, games tend to lose their players then switch off the server one day. so, Nicholas Lovell's suggestion for free-to-play games is never let players feel bored and leave even for a while. In other words, keeping updating the game. According to the official website, *Maplestory*, since it was released, has been through 213 versions and 38 major game updates, which contains the most famous patch called "big bang". From 4 original jobs (Warrior, Magician, Thief and Bowman) to now five main classes 46 jobs now.

Lastly, *Maplestory* has plenty of ex-game communities. On the one hand, Nexon provides an official forum for everyone. Players take part in different discussions there, post their fan fictions, make friends and join different other activities. However, due to the complex system of jobs, missions, maps, etc. in the game, players have spontaneously established many other communities, and some of them become a gathering place for a large number of players, such as insoya.com in South Korea, about 250 million people visited Insoya from August 2007 to September 2017, browsing 5.7 billion web pages. According to SimilarWeb, its global website ranked in the top 15,000, and in South Korea, it ranked in the top 180 in August 2017. Most of these communities are divided into sections, and there are sections for sharing experience in the game, posting tutorials, making various game guides, posting story art creation, recruiting teammates, and friends. The development of these communities not only provides a base for players but also greatly improved the retention rate of players, which also can be seen as a reason that contributes to the longevity of *Maplestory*.

League of Legends (2009)

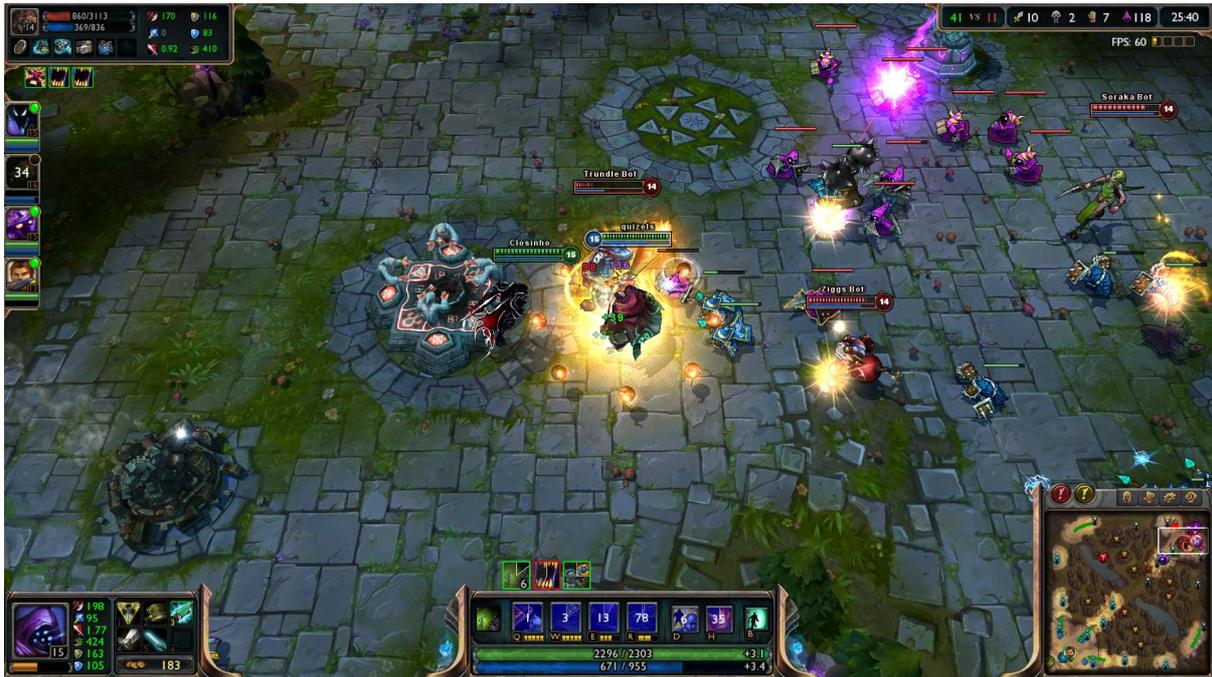


Figure 4-2: *League of Legends* Screenshot (Source: gamingcfg.com)

League of Legends (2009) is a multiplayer online battle arena (MOBA) game developed and published by Riot Games in 2009. Ever since its release, *League of Legends* has grown to become the most popular game in the world. The user base of the game was growing rapidly during the time. According to Riot's official press, in November 2011, there are 11.5 million active players each month. The data in October 2012 is 32 million. When it comes to 2014, monthly active players increased to 67 million. In 2013, 2015 and 2016, Riot did not release new official statistics on their website, but according to the interview of *League of Legends*' co-founders Marc Merrill and Brandon Beck, the number of monthly active players in 2006 has surpassed 100 million (Phil 2016). In 2017, the estimated monthly active players are about 81 million from a complex algorithm made by Heimerdinger. For 2019's statistics, according to rankedkings.com, the number estimated to be 115 million. As can be seen in the figures, *League of Legends* has sustained a significant amount of interest for a long time. if there is no accident, the game is going to have a considerable longevity. In the next session, we are going to talk about what factors make *League of Legends* longevity.

The most important reason is its eSports. ESports today is the most effective way to connect players with the game. Like the influence of eSports to *Counter-Strike: Global Offensive*, eSports has a greater impact on *League of Legends*. No matter the person who played the game before but now does not have time to play the game, or the person belongs to the personas of Could Gamer, the popcorn Gamer and the Backseat Viewer, they are all tied to the game to make the game to be more active and more valuable.

The most famous tournament in *League of Legends* is World Championship. 2019 World Championship brought in more than 100 million viewers. In 2018, the finals were watched by 99.6 million unique viewers. 2017 League of legends global finals ratings peaked at 80 million independent viewers. All these statistics make *League of Legends* one of the most prestigious sports in the world. But there are many steps to get there. In 2019, over 60 unique events were hosted in 36 different cities across the world. These consisted of regional, challenger, national, and collegiate events, all of which helped contribute the ecosystem (Ethan 2019).

The second reason is that the social aspects inside the game. Not like MMORPG, *League of Legends* as a MOBA game, in the game, players do not need to find their teammates (players can also form their own team if they want), the matching system automatically forms the two teams for players to battle. There is no need to consider the time limit. As long as players want to play the game, they can get a team to enjoy the teamwork without any difficulties. This efficient approach undoubtedly appeals to the largest group of gamers – Socializer which count for 80% of the players according to Bartle taxonomy of player types. On the other hand, when in the game of *League of Legends*, the team fight for the same purpose which is usually to destroy the opposing team's "Nexus", Achiever (10%) and Killer (1%) players are also being attracted by its gameplay. As a result, 91% of player are *League of Legends's target user*.

Candy Crush Saga (2012)



Figure 4-3: *Candy Crush Saga* Screenshot (Source: Pinterest)

Candy Crush Saga (2012) is a match-three puzzle video game released by King. The research from Game Analytics shows that the average life cycle of mobile game is only 6 to 12 months. However, the life span of *Candy Crush Saga* far exceeds this number. In addition, *Candy Crush Saga* is still in its maturity stage and haven't arrived at its decline stage. In 2018, the *Candy Crush* series made more than 1.5 billion US dollars for developer King. Among them, 63% (about 945 million US dollars) came from *Candy Crush Saga*. Although it has gone through six years, the revenue of *Candy Crush Saga* still grows by 10% compared to 2017. The revenue in the first quarter of 2019 exceeded 251 million US dollars, accounting for 64% of the total revenue of the series, an increase of 7% over the same period last year.

The biggest feature of *Candy Crush Saga's* (2012) sound effect is that its style is very unique. In *Bejeweled 3* (2010), the background music of the game creates a relatively tense atmosphere, and because of the difference in the positioning of the game style, the music of *Candy Crush Saga* is more pleasant and relaxing, and

considering the modern life is fast-paced and stressful, healing music can often make people forget their troubles for a moment, which seems to make *Candy Crush Saga* fill the gap in this game genre.

Besides, *Candy Crush Saga*'s music is very layered. Taking the IOS version as an example, it consists of six parts, which are home page music, the map page music, the button touch effects, the background music of the game, the interactive sound effects of the game and the ending music. The combination of eliminating the candy's percussion and appreciation can produce a wonderful brain chemical effects which may explain the long life of this game. The bonus sound is also built in layers. When playing *Candy Crush Saga*, if you made three tiles matched, you will hear a reward sound of a crisp candy collision every time, if you made four or even five tiles matched, the reward sound is stronger, if you eliminate the enhanced version of candy which is made of by matching four tiles right, you get another strong reward sound and the effect of different type of enhanced candy is different. If you can make a series of cascades, you will get praise like "Sweet", "Tasty", "Delicious", "Divine" according to the size of the chain reaction. When you complete a level, "Sugar Crush" will be announced. There are more sound bonus if you achieve more, such as "Moon Struck", "Frogtastic", "Super Sugar Crush", "Sugar Stars".

The use of computer games is a complex and multi-faceted behaviour. Behavioural psychology usually studies the motivation of people's behaviour. Using behavioural psychology to study the bonus sound of *Candy Crush Saga* may help explain the behaviour of people when playing games. And why they continue to play this game (Klimmt and Hartmann 2006). In behavioural psychology, it is believed that self-efficacy determines the motivation of most people's behaviour. If a game wants people to continue playing a game, it is very important to maintain and enhance the player's sense of efficacy (Lee 2000), otherwise the decline in self-efficiency will lead to a reduction in people's motivation to play until no one is interested in the game. The bonus sound in *Candy Crush Saga* is responsible for maintaining part of the player's self-efficacy. In the academic field of game research, there is a formula called "ludic loop". "Ludic loop" refers to a pleasant loop that can encourage people to repeat the same behaviour voluntarily. In the Natasha Dow Schüll at the Massachusetts Institute of Technology's research on slot machines and their appeal

to addicts, it was found that the ludic loop uses techniques familiar to behavioural psychologists, guided by lights, jingles of coins, and occasional cash rewards, people perform the same actions repeatedly in short cycles (Heaven 2014). Bonus sound in *Candy Crush Saga* is considered to follow this formula have hit upon ludic loop to make players addicted to the game, and the most direct helper to addicted players is dopamine, a brain signalling chemical substance, its role is very subtle. Studies have shown that regardless of whether it brings pleasant feedback, it will eventually participate in forcing the same action (Behavioural Neuroscience, vol 119, p 5). This explains the appeal of *Candy Crush Sage*. The combination of bonus sound and the animation makes the player generate dopamine then become addictive to this game, relatively prolonging the use time of each player, and thus affecting the game life.

In addition to aesthetics, *Candy Crush Saga* also has some special techniques to do with longevity, that is *Candy Crush Saga's* innovative social mechanism in this game genre. First of all, in the social mechanism of *Candy Crush Saga*, players can slide through the level map to see where their friends are. This creates a kind of competition invisibly. Players also play this game with an additional motivation: chasing their friends or not being pulled too far. Secondly, when players have consumed their lives, they can get additional lives through the Ask friends feature, which strengthens player-to-player interaction. According to Bartle's taxonomy of player types, players can be divided into four player types: Achievers, Killers, Socializers and Explorers. Janaki Kumar and Mario Herger created a test based on Bartle Taxonomy, the results show that about 80% of the players are Socializer, Explorer and Achiever players account for 10% each, and less than 1% of players are Killer players. It can be seen from this test that most of the players are Socializers, so can we think that the social mechanism in *Candy Crush Saga* can please these most players to retain them and extend the life of the game.

Discussion

After analysing these eight games, we have a general understanding of them and have some factors that make these games long-lived. To make it more straightforward and to make it easier to analyse, we get figure 5-1 and figure 5-2.

	Pricing Model	Genres
<i>Vampire: The Masquerade – Bloodlines</i> (2004)	Retail	Action role-playing game (ARPG)
<i>Minecraft</i> (2011)	Retail	Sandbox, survival game
<i>Counter-Strike: Global Offensive</i> (2012)	Retail	First-person shooter (FPS)
<i>World of Warcraft</i> (2004)	Subscription	Massively multiplayer Online role-playing game (MMORPG)
Final Fantasy XIV (2013)	Subscription	Massively multiplayer Online role-playing game (MMORPG)
<i>Maplestory</i> (2003)	Free-to-play	Massively multiplayer Online role-playing game (MMORPG)
<i>League of Legends</i> (2009)	Free-to-play	Multiplayer online battle arena (MOBA)
<i>Candy Crush Saga</i> (2012)	Free-to-play	Match-three puzzle game

Figure 5-1: The Genres and Pricing Model of Eight Games

Game \ Longevity Factors	Esport	Gambling/Trading	In-game social aspects	Ex-game community	Episodic content	Strong story	Support from players	Institution potential	Neurotic addiction	Replayability and creativity
<i>Counter-Strike: Global Offensive</i>	x	x	x	x						
<i>World of Warcraft</i>			x	x	x					
<i>Vampire: The Masquerade – Bloodlines</i>							x			
<i>Minecraft</i>				x				x		x
<i>Final Fantasy XIV</i>			x		x	x				
<i>Maplestory</i>			x	x	x					
<i>League of Legends</i>	x		x	x						
<i>Candy Crush Saga</i>			x						x	

Figure 5-2: Longevity Factors Matrix Table

Generally, the factors that make a game long-lived can be roughly divided into ten categories:

- I. Social mechanics inside the game;
- II. the presence of communities outside the game;
- III. New episodic content. It is significant not to make players feel bored;
- IV. Esports meets the need of more and more different game personas, such as Cloud Gamer, the Popcorn gamer and the Backseat Viewer, which account for 38% in the whole players;
- V. Support from fans, can people work on the game, or can people contribute to the game? For example, after the game company closed, the fans of *Vampire: The Masquerade – Bloodlines* fixed bug for the game to survive the game
- VI. Institutional use, typically for learning potential, *Minecraft* being used as a teaching aid in some schools.
- VII. Gambling elements. For example, skin gambling mechanics in *Counter-Strike: Global Offensive*;

- VIII. Neurotic addiction, in the game of *Candy Crush Saga*, bonus sound enables players to produce dopamine to make players addicted to the game. Its essence is the same as the mechanism of slot machines which are a kind of physical gambling game;
- IX. Replayability and creativity in game;
- X. Strong story.

From figure 5-1 and figure 5-2, we have also drawn some laws and trends:

First, in these eight games, in-game social mechanics and communities outside the game have played a role in their longevity. This clue may have some inspiration for developers and operators who want the game long-lived: how to effectively use various in-game mechanisms to connect players when developing games: like *Candy Crush Saga*, it is a single play game and compared to other seven games we analyzed, it is a smaller game, but it innovatively adds social mechanics so that players are no longer alone in playing games and have the opportunity to interact with friends; or the voice system in *Counter-Strike: Global Offensive* and *League of Legends*; various communication systems in MMORPGs. Besides, how to operate the community to improve user stickiness, such as some communities created by the players, was certified by *World of Warcraft*. The game itself also provides official forums for players.

Second, esports is a big trend. Most of them occur in games where the PvP mechanism is the primary mechanism of the game, such as *League of Legends* and *Counter-Strike: Global Offensive*. *World of Warcraft* as an MMORPG also has professional and regional tournaments, because the scale of its matches is relatively small, it did not be perceived as the main factor affecting its longevity, but we cannot deny its effect. Although large-scale esports events are dominated by PvP lead games, under the trend of esports, it may be used as an inspiration to develop unique esports events in other genres of games.

Third, from the analysis of *Maplestory*, *World of Warcraft*, and *Final Fantasy XIV*, new episodic content is necessary for MMORPGs.

Lastly, from figure 5-2, we can obtain that six out of eight games have in-game social aspects, and five out of eight games have ex-game community. Tentatively, we can say that in-game social characters and ex-game community are essential features to add to the game if people want it to have longevity.

Conclusion and Future Work

Conclusion

In the history of computer and video games, the emergence of countless games has been accompanied by the decline of numerous games. However, through observation of the emergence and decline of multiple game titles over years, we can see that the lifetime of individual titles can vary enormously from a few days to several decades. In this paper, we try to identify factors that help game longevity by analysing games from different pricing models and game genres. By analysing eight games, the paper has started to draw the map of longevity factors that will help people understand longevity in games. For now, we have identified ten different aspects (see figure 5-2), some of which are from design features, the rest are from other aspects.

We hope that these aspects can serve as a starting point to help scholars and game designers understand what can help make a game have longevity. Besides, this paper developed the methodology on how to analyse the game to identify characteristics that help grow the game. It improves the understanding of how longevity can arise and what factors can influence it. This methodology is also here can for someone who wants to understand longevity in games to extend and define more categories.

Future work

Because there is much more to the market than these eight long-lived games, the longevity factors matrix table can be developed. We can analyse more games to get other more aspects that have not been discovered for future work. To make the data more reliable and more convincing, we should analyse more games for one specific game genres and analyse game genres that have not been included here due to time and space constraints. Once there is an extensive database, we can establish how popular different aspects are, i.e., perform a more exhaustive quantitative

analysis to give game designers a clearer picture of which factors are more important than others for the success of their games.

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Appendix 1

Monthly Average Player and Number of Representative Events from Jan. 2016 to
Dec. 2019 (Source: steamcharts.com and HLTV.org)

Date (month. Year)	Monthly Average Player	Number of Representative Events
Jan. 2016	365371.1	0
Feb. 2016	376285	0
Mar. 2016	379427	1
Apr. 2016	375795.9	1
May. 2016	338738.4	0
Jun. 2016	334311.1	0
Jul. 2016	353777.6	1
Aug. 2016	347229.3	0
Sept. 2016	322525.9	0
Oct. 2016	333076.5	0
Nov. 2016	329045.3	0
Dec. 2016	342195.7	0
Jan. 2017	393109.5	1
Feb. 2017	402385.7	0
Mar. 2017	386908.7	0
Apr. 2017	392199.2	0
May. 2017	371829.3	0
Jun. 2017	374388	0
Jul. 2017	377589	1
Aug. 2017	374425.7	0
Sept. 2017	354402.1	0
Oct. 2017	341861.3	0
Nov. 2017	321131.4	1
Dec. 2017	340876.9	0
Jan. 2018	382030.5	1
Feb. 2018	382457.1	0
Mar. 2018	354270.3	0
Apr. 2018	289076.7	0
May. 2018	262170.9	0
Jun. 2018	266862.2	0
Jul. 2018	273307.3	0
Aug. 2018	283531.3	0
Sept. 2018	333164	2
Oct. 2018	325907.8	0

Nov. 2018	310085.4	1
Dec. 2018	395509.3	0
Jan. 2019	401366.9	0
Feb. 2019	371359	1
Mar. 2019	390240.2	2
Apr. 2019	351,989.90	1
May. 2019	364417.3	1
Jun. 2019	389376.7	0
Jul. 2019	393782.8	1
Aug. 2019	415097.3	1
Sept. 2019	410925.6	2
Oct. 2019	408995.3	0
Nov. 2019	426080.8	1
Dec. 2019	456701.6	2