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INVESTIGATING THE ROLE OF ESPORT ON  
THE FREE TO PLAY BUSINESS MODEL:  
AN ANALYSIS OF LEAGUE OF LEGENDS ECONOMIC SUCCESS

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**Etienne Jonquière**

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## **Abstract**

eSport is a rising entertainment industry that has grown exponentially in the past decade. Competitions broadcasted online make eSport appealing for a large audience of video game enthusiasts, creating an opportunity for sponsorship deals. To this day, scholars have focused their efforts on understanding which are the motivations for people to watch eSport, and only scarce research has been made to measure how eSport consumption affects video game consumption. Filling this literature gap is the first objective of this study. Free-to-play games are a logical response to the shifts of the video game industry. A second objective is to investigate the determinants of free-to-play games profitability: while being free, these games generate their revenues through the sale of virtual items. League of Legends, a successful free-to-play game and leading player in the eSport industry, was selected as the context of this study.

A quantitative questionnaire was distributed in eSport and League of Legends online communities. A PLS-SEM analysis revealed two motivations to watch eSport, (1) knowledge acquisition and (2) aesthetics. Such motivations drive the players' perception of the game enjoyability and ease of use, this study being the first to establish these links. The model also confirms that customer loyalty predicts purchase intention of virtual items.

Findings carry implications for a wide range of eSport and video game industry stakeholders and emphasize the importance of mentoring novices and rewarding the loyalty of existing players.

Keywords: eSport, online games, free-to-play, adoption behaviour, virtual items

JEL Classification: M30; M31.

## Resumo

O eSport é uma indústria de entretenimento em ascensão que cresceu exponencialmente na última década. As competições transmitidas online tornam o eSport apelativo para uma grande audiência de entusiastas de videogames, criando uma oportunidade para importantes patrocínios. Até hoje, as investigações têm-se focado na compreensão de quais são as motivações para as pessoas assistirem ao eSport, e foram feitos poucos estudos para medir como o consumo de eSport pode afetar o consumo de videogames. O primeiro objetivo desta tese é preencher esta lacuna na literatura. Um segundo objetivo é investigar os determinantes da rentabilidade dos jogos free-to-play: jogos gratuitos que geram as suas receitas através da venda de itens virtuais. Com esse propósito, esta tese foca-se no caso do League of Legends, um jogo free-to-play bastante popular na indústria de eSport.

Um questionário quantitativo aplicado nas comunidades online de eSport e League of Legends foi analisado utilizando equações estruturais PLS-SEM e revelou duas motivações para assistir ao eSport, (1) aquisição de conhecimento e (2) estética. Estas duas motivações impulsionam a percepção dos jogadores sobre a capacidade de utilização do jogo, sendo este estudo o primeiro a estabelecer estas ligações. O modelo confirma ainda que a fidelização do cliente prevê a intenção de compra de itens virtuais.

As descobertas têm implicações para uma vasta gama de intervenientes da indústria de eSport e videogames e enfatizam a importância de orientar os novos jogadores e recompensar a lealdade dos jogadores existentes.

Palavras-chave: eSport, jogos gratuitos online, comportamento de adoção, itens virtuais

Classificação JEL: M30; M31.



## **List of Abbreviations**

A: Aesthetics  
ARPU: Average Revenue Per User  
ATT: Attitude Towards Using  
AVE: Average Variance Extracted  
CL: Customer Loyalty  
CM: Critical Mass  
CR: Composite Reliability  
CUI: Continuous use intention  
DOTA: Defense of the Ancients  
E: Escapism  
F2P: Free-to-Play  
LoL: League of Legends  
MOBA: Multiplayer Online Battle Arena  
MSSC: Motivation Scale for Sports Consumption  
PE: Perceived Enjoyment  
PEOU: Perceived Ease of Use  
PIVI: Purchase Intention of Virtual Items  
PU: Perceived Usefulness  
RP: Riot Points  
SI: Social Interaction  
SN: Subjective Norms  
SSBM: Super Smash Bros Melee  
TAM: Technology Acceptance Model  
TRA: Theory of Reasoned Action  
VA: Vicarious Achievement

## Chapter 1 - Introduction

In the last decades, video games have rapidly grown to become one of the most common forms of entertainment. In fact, the industry already accounts for half of the entertainment market in the United Kingdom: put simply, it means that sales of video games outperform the combined efforts of music and video industries (Entertainment Retailers Association, 2018; Parsons, 2019). With an average annual growth rate of 13.9% over the period 2012-2018, the industry turnover is expected to reach 170 billion dollars by 2022 (Newzoo, 2018). Video games have never been so popular, thanks in particular to the democratization of Internet: with 4 billion users in 2018 (almost four times as many as in 2005), publishers are able to address their products to a growing number of potential customers (Xerfi, 2020). As a direct consequence, more and more games are being developed to be played on mobile platforms (such as tablets or smartphones) as they are the main device used to access the Internet in emerging countries (Xerfi, 2017).

The video game industry being already familiar with the change of gaming platform (each generation of consoles bringing its share of innovation), one could argue that the most significant development over the recent years would be that some video game enthusiasts would rather spectate other players than play the game. Targeted to gaming video content and audiences, video sharing websites have emerged and thrived, such as YouTube Gaming, Mixer or Twitch.tv. The last platform, acquired for 970 million dollars by Amazon in 2014, gathered more than 1 million concurrent viewers in average over the whole year 2019 (Statista, 2019). Spectators from all over the world can access a wide variety of “live-streams”: depending on its taste or current mood, the spectator can either access a commented gameplay by a player he appreciates, a talk-show during which the streamer directly addresses its community, or the live broadcast of a competition between the best players of a franchise.

According to Borowy & Jin (2013), this latter practice, which cleverly mixes video game practice, fierce competition and a spectacle dimension, takes its roots into the early stages of video gaming and arcade culture. ESport has been roughly defined “as a form of sports where the primary aspects of the sport are facilitated by electronic systems” (Hamari & Sjöblom, 2017, p. 211). This entertainment industry has generated no less than 865 million dollars of revenues in 2018, a record number which is expected to double by 2022 (Newzoo, 2018). In 2022, sponsorships will account for 35% of the total eSport market revenue: whether endemic to this industry or not, global brands such as Coca-Cola or Mercedes Benz seek to take benefit from

the audience of eSport events. Already important, the audience of this nascent industry seems to be ever-expanding: with an average annual growth rate of 14% (2017-2019), it is projected to reach 645 million spectators by 2022 (Newzoo, 2018; Xerfi, 2020). Frequently compared to traditional sports, both by its defenders and its detractors, eSport is slowly changing the spectrum of what can be called a sport (Hallmann & Giel, 2018). The current International Olympic Committee president Thomas Bach however argued that competitive video games aren't fit for the Olympics, despite their featuring in the last Asian Games (Purchase, 2018).

Consequently, the field of eSport has been extensively explored by academic research in the past two decades. Previous research on eSport has been mainly focused on understanding the adoption of eSport by its audience: Cheung & Huang (2011) conducted an initial research based on qualitative interviews and determined nine different spectator profiles, while the motivations to watch eSport have been explored in detail in several articles (Hamari & Sjöblom, 2017; Qian & Al., 2019; Xiao, 2020).

As studies and statistical reports are carried out, it is confirmed that the vast majority (73%) of viewers of video game content have been found to have an existing relationship with gaming culture (McDonald & Al., 2015). While differences exist between watching eSports and playing video games (one is a "passive" behaviour, the other is a more "active" one), authors agree to say that a viewer of eSports is usually a video gamer (Xiao, 2020). However, apart from Törhönen & Al. (2020), few researches have been made on the impact of eSport viewing on the gaming habits of spectators. In the context of a market as competitive as the one of video games, this relationship seems to be worth exploring.

If this link between video games players and spectators appears to be crucial for the whole industry, it represents a major opportunity for "Free-to-play" video games. As defined by Kumar (2014), the freemium business model (often referred as "free-to-play" or "F2P" in the video game industry) refers to a product and pricing structure in which the core service is free, but revenue is generated through the sales of complementary premium products and services (Hamari, 2015, p. 300).

Through its video game publishing division "Tencent Games", the Chinese conglomerate Tencent has made of the F2P business model its flagship, achieving an average annual growth rate of 38.9% over five years (Xerfi Global, 2020). Investing into numerous game publishers over the years has proven to be a successful strategy: Tencent is now considered the largest video game company in the world (Messner, 2019). Indeed, the Chinese giant now has control over the companies that run the five leading F2P gaming titles in terms

of revenue (SuperData, 2019), including League of Legends and Fortnite, the most profitable F2P game for both 2018 and 2019 (Handrahan, 2019).

This business model emerged to compete with classic models (Nojima, 2007; Flunger & Al., 2017). It offers two main advantages: in opposition to one-time payment or subscription-based model, it requires no up-front financial commitment, and therefore draws a large customer base (Anderson, 2010). In addition, by offering a wide variety of virtual goods for a small amount of money (usually between one and five dollars), it allows flexible price points for players with different purchasing power or willingness to pay for additional content (Paavilainen, Hamari, Stenros & Kinnunen, 2013).

Although, attracting new players is just the first step: as F2P games rely heavily on a small minority of paying users, it is crucial for game developers to retain them. Cheung & Al. (2015) explain that the concept of customer engagement has attracted increased attention in the past few years, as it is regarded as an “effective retention and acquisition strategy”. For this reason, there has been extensive research on what motivates people to play games, notably in the context of online games in which social interaction between players takes an essential role (Hsu & Lu, 2004; Yee, 2007; Wu & Liu, 2007; Johnson & Al., 2016). Continuous intention to play and customer loyalty have also been examined in the context of F2P games (Choi & Kim, 2004; Guo & Barnes, 2012), while their impact on purchase intention of virtual goods has been proven to be significant (Cheung & Al., 2015; Balakrishnan & Griffiths, 2018; Hamari & Al., 2020). Virtual goods (or virtual items) have been under the scrutiny of academic research ever since Lehdonvirta (2009) defined the F2P revenue model and created a typology for these goods.

As mentioned earlier, there is yet scarce research on the effects of eSport consumption on video game habits. In the context of F2P games, the question arises as to know if eSport consumption enhances the intention to play of gamers, and if this infatuation benefits the revenue model via an increased sale of virtual items.

The decision was made to select a F2P online video game with a strong focus on competition, and which has already proven itself in the domain of eSport. For this purpose, League of Legends (often abbreviated “LoL”) was chosen. It is the most successful Multiplayer Online Battle Arena (or “MOBA”) video game, and the fourth F2P game in terms of revenue generated and its player base hasn’t stopped growing in more than a decade of existence, reaching 100 million monthly active users in 2016 (Statista, 2019). Esports wise, LoL organized the most popular tournament of 2019: the World Championship, which gathers the best team

and players, amassed over 137 million hours watched over the course of the month-long competition. Consequently, it has been awarded “Best eSports Game” and “Best eSports Event” during the 2019 Game Awards.

### **1.1. Research objectives**

Addressing the under-researched area of eSport consumption, this study focuses on its consequence on the Free-to-play business model, using League of Legends as a case study. First, it is necessary to understand what motivates people to watch League of Legends professionals compete. Then, a second objective of this study is to investigate if eSport consumption enhances intention to play of individuals, and if it enhances their loyalty towards the game. Lastly, this study will focus on League of Legends’ virtual items and examine whether if customer loyalty makes them more desirable for players, and by which means.

Three main questions are as follows:

- What motivates League of Legends players to watch eSport?
- Is eSport consumption enhancing customer loyalty for League of Legends players?
- What are the consequences of customer loyalty on players’ purchase intention of virtual items?

### **1.2 Structure of the study**

The following work will be divided in several sections. First, the main topics related to eSports and the Free-to-play business model are to be defined and explored through the literature review.

With the objective of filling in the identified literature gap, hypotheses are to be formulated, and a structural model to be devised from existing research.

Then, the methodology employed will be presented, from collection of data to demographics of respondents. This chapter will also present the method and tools applied to analyse data.

Following this section, results of the empirical data will be analysed. The model fit as well as the constructs will be examined in regard of their validity and reliability, before discussing whether the hypotheses are supported or not.

Afterwards, key findings will be addressed in relation to previous studies, continuing with a discussion on the limitations of current study and suggestion for future researches.

## Chapter 2 - Literature Review

### 2. 1. What is eSport?

Despite increasing media coverage, the term eSport and what it stands for is still unclear to a large part of the population. In this first section of the literature review, we therefore propose a definition of the term and its history. Then, we present League of Legends and investigate what are the reasons that gave this game its prestige in the context of eSport. Finally, we will expand on the motivations that drive a growing number of players to watch eSport.

#### 2. 1. 1. Context and definition

When the subject of eSport is addressed, there is usually controversy. Indeed, online sports have only recently enjoyed widespread international adoption, and resistance persists on the question of whether eSports can really be considered as a sport: “this conceptual conundrum is relevant not only to defining eSports, but also to draw the boundaries of what can be considered as sport in general” (Hamari & Sjöblom, 2017, p. 212). As eSports can be found at the crossroads between video gaming, and professionalized sport (Brown & Al., 2018), this entertainment industry has historically been compared or confronted to traditional sports in academic research. However, it seems that many are of the opinion that eSports cannot be qualified as sport, simply because a player's skill is not measured by his physical ability or finesse, as the eSports’ athletes seem to “just sit riveted to their chairs” (Hamari & Sjöblom, 2017, p. 212). Witkowski (2012) argues that the player’s body and his physical activities remain an important part of the overall eSport performance.

Although, the events that define sport outcomes take place within an electronic and computerized environment. This does not imply that eSports cannot be physically demanding for players (Taylor and Witkowski, 2010; Witkowski, 2012, quoted in Hamari & Sjöblom, 2017, p. 212). How physically demanding eSports are depends on “the adequate level of human-computer interaction needed to control the game” (p. 212). Most of the time, this interaction requires the player to have mostly cognitive skills such as environmental analysis, goal planning and management, and communication with his teammates. These abilities are used in games such as Multiplayer Online Battle Arena(e.g. League of Legends, DOTA 2), in First Person Shooters (e.g. Counter-Strike: Global Offensive), Real Time Strategy games(e.g. Starcraft 2, Warcraft 3), Collectible Card games (e.g. Hearthstone) or sports simulation games (e.g. the

FIFA or NBA 2K series). One can notice that these skills are also essential in "traditional" sports such as sailing or golf for example.

However, there are some video games that rely on more physical than mental interaction between the player and the computer. Examples include dance games (e.g. Dance Revolution) or games that use traditional sports such as virtual cycling (e.g. Zwift). The frontier between eSport and traditional sports resides in the difficulty to integrate the physical dimension in digital games, however with the development of new tools such as virtual reality, this frontier is tightening and may even disappear one day. A recent and perfect example for this would be experience offered by French company EVA (for Esports Virtual Arenas) which allows players to compete against each other and roam freely in a real-life laser-tag competition, while immersing them in a virtual reality (Ooi, 2020).

This perceived lack of physical skills in eSports is not the sole criteria on which scholars differentiate "gaming" from sporting activities. Summerley (2020) explains that the lack of mutually agreed rules in eSport competition goes against Suits (2017) definition of sport. However, the author also quotes the notable example of GameCube fighting game Super Smash Bros. Melee, which suffered from its publisher's willingness not to get involved with the competitive scene. Facing Nintendo's disdain, the "Smash" community developed its own tournaments and rules, making of 2001 "SSBM" one of the most important eSport games of the last decades.

The demarcation between traditional sport and eSport therefore remains, and a definition dedicated to virtual competitive games is required. Even though many articles have been published on the context eSport, there is no consensus on its definition. Therefore, we will quote below those which seemed to us the most coherent and adequate to capture the essence of this new entertainment industry.

The term "electronic sport", or "eSport", as it was usually mentioned, was first used by Wagner in the Online Gamers Association review in 1999 (Wagner, 2006). Basing his definition on the works of sport researcher Claus Tiedemann (2004), the author defines "eSports" as "an area of sport activities in which people develop and train mental or physical abilities in the use of information and communication technologies" (Wagner, 2007, p.182, quoted in Xiao, 2020, p. 96). Although this definition illustrates what the activity itself consists of, there is no reference to its competitive element (Ratliff, 2015). This definition is still one of the most cited today (Funk & Al, 2018; Pizzo & Al, 2018; Hamari & Sjöblom, 2017).

In their 2010 article, Jonasson & Thiborg simply define eSport as "competitive computer games". For Lee & Schoenstedt (2011) eSport is considered to be subset of wider gaming environment.

A last definition is offered by researchers Hamari and Sjöblom and focuses on the 'virtual world', while in the 'real world' they are orchestrated by humans, and thus defines team sports as "a form of sports where the primary aspects of the sport are facilitated by electronic systems; the input of players and teams as well as the output of the esports system are mediated by human-computer interfaces." (Hamari & Sjöblom, 2017, p.211).

As we have seen with this variety of definitions ranging from 1999 to 2016, the very essence of eSport is still debatable. In addition, the debate on the qualification of eSport as a sport is still open to this day, both on the research side and on the stakeholders' side (Lee & Schoenstedt, 2011; Pizzo & Al., 2018). Jenny & Al. (2017) argue that, in order for eSports to be considered as sports, they still lack institutionalization and the display of physical skills.

But beyond the words, it is the subject itself that is evolving and dragging along its own history.

## **2. 1. 2. A quick history of eSport**

In the 1970-decade, Internet as we know it did not yet exist, and computer science was the study discipline of only a few researchers. Although the first videos of recorded gameplay were produced and all the tools were available to organize competitions, it was not until October 1972 that the first "eSport" official event took place. The "Artificial Intelligence" department research of the Stanford University hosted what will be remembered as the Intergalactic Space War Olympics, a tournament organized around the 1962 pioneer video game Space War (Farokhmanesh, 2012). As the first video game competition of all time, it welcomed only two dozen players, that either competed in solo or in teams. The solo tournament was to be won by Bruce Baumgart, which was awarded a one-year subscription to Rolling Stone magazine. It seems that eSport and sponsorship are meant to be tied to each other, as the magazine happened to be a sponsor of the event. In fact, what is now considered as the first official video game competition was reported on by Stewart Brand, a biology student, and the article is still accessible today (Baker, 2016).

But the real craze for virtual gaming competition didn't start behind the keyboards, but behind the arcade terminals and thanks to one of the most important features: high score. This culture of competition obviously started with the groups of friends and the arcades themselves.



However, in a context where the Internet is globally absent, it would be easy to believe that these small rivalries are limited to neighbourhood wars, but it is not so! Very early on, game publishers understood the value of communicating about their flagship products (Borowy & Jin, 2013). Between the official magazines, the video game trade press, but also fanzines, gamers had a privileged way to keep up to date with the latest novelties but also the best performances. The leader boards, which ranked the highest officially recorded scores, literally elevated certain personalities to the rank of living legends. Billy Mitchell, which has been the undisputed king of arcade game Donkey Kong, is a notable example: a documentary was even devoted to him in 2007, bearing witness to the glory that has been maintained over the years: this primary form of video game contests has been defined as “proto-eSport” (Taylor, 2012). As we have seen, although it was more confidential at the beginning of the 1990s, a rich competitive life emerged very early in the history of video games. These are just a few elements of a huge picture, but they prefigure in a way what will become, years later, eSport.

Lee & Schoenstedt (2011) divide the history of eSport in two distinct eras: the early arcade era, and the Internet era. Lopez (2012) argues that the FRAG competition, organized by the Cyberathlete Professional League (CPL) is one of the first major events of the modern eSport scene. It mainly hosted team tournaments on FPS titles such as Quake III. However, it is a far cry from the astronomical sums of money involved today; the first edition, held in Dallas in 1997, promised \$4,000 to the tournament's winners (Siko, 2014). The 2000s will also see the development of the first eSport professional leagues, such as the Electronic Sports League. The Electronic Sports League was founded in Germany in 1997, and is now present in many European countries, while the Major League Gaming is mostly active in the United States. These professional leagues are responsible for organizing eSport events, such as the French “Gamers Assembly”. The IEM Katowice Major, held by ESL on the FPS video game Counter-Strike Global Offensive, amassed 53 million hours watched for its 2019 edition (Fitch, 2020).

The field of eSports grew in weight during the last decade and gained in professionalization, notably thanks to the emergence of online live-streaming websites such as Twitch, which broadcasted the competitions for free, and reached massive audiences of eSport enthusiasts (Johnson & Woodcock, 2018). As soon as 2012, there was no less than 430 registered professional gamers, people that were making a living out of the gaming discipline, as claimed in article investigating the “new research field of eSport” that in South Korea (Adamus & Al., 2012). As awareness rises on the field of eSport, the entertainment industry begins to gain interest from major sponsors such as McDonald’s (Andureau, 2018). Sutton (2016) explains

that the consumption of competition broadcasts by young eSports enthusiasts had led traditional sport organization, such as ESPN, to invest in eSports and air programs dedicated to its events. In France, the French media company Webedia launched ES1 in January 2018, the first TV channel dedicated to eSport (Andureau, 2018). Player gratification has also exploded in recent years: the current world record for the highest cash prize is held by 16 years old Kyle “Bugha” Giersdorf, who won 3 million dollars by topping the world’s best players at the first ever Fortnite World Cup, held in 2019 (Huddleston, 2019). As a way of comparison, the same stadium also held the 2019 edition of the US Tennis Open, during which Rafael Nadal, winner of the event, was awarded 3.85 million dollars (Elkins, 2019).

Beyond economic considerations, it can be noticed that the perception of eSport is slowly evolving. As mentioned in the introduction, if International Olympic Committee’s president Thomas Bach still considers “killer games” too violent and unfit for the Olympic program, some eSport titles were featured at the 2018 Asian Games as a demonstration sport (Purchase, 2018). Similarly, Intel announced that they will organize a Rocket League and Street Fighter V competition, with half a million dollars cash prize in total, days before the now-delayed 2020 Summer Olympics of Tokyo (Thielmeyer, 2019).

This leads us to talk about the video game on which this study is based, as it represents a perfect example to illustrate the evolution and success of eSport.

### **2. 1. 3. An introduction to the video game League of Legends**

League of Legends is a Multiplayer Online Battle Arena (often referred by its acronym MOBA) a gaming genre which was truly born when a mod (a modified version of the game made by players) for Blizzard’s Warcraft 3 came out, named “Defense of the Ancients” was released. The game was released on PC in 2009 for the North American players, (Kolan, 2011), while players from other regions such as Europe and Asia, as well as MacOs users, had to wait several years before gaining access to the game. In 2015, two of the three most played PC games were MOBAs, including League of Legends and the original mod’ successor, DOTA 2 (Mora-Cantallops & Sicilia, 2018).

The game is set in a fictional world, and currently includes 148 champions (as of January 2020) which are unique playable characters, each one coming with its own set of abilities and skills (Segal, 2014). For each game, ten players select an individual champion, and compete against each other in the form of two teams of five. Every player has its own role, just as in traditional sports such as football: some champions are meant to deal damage to opponents,

while others dedicated to protecting their teammates. The main objective and winning condition is to destroy the enemy team's headquarter (or Nexus), which is not accessible from the start of the game: each team has to cooperate and gradually progress on the map to reach it (Andureau, 2019).

Thanks to its commercial success (the video game generated 2.1 billion dollars of revenue in 2017) and its strong presence on the eSport environment, LoL has been the subject of numerous academic research in the previous years (e.g. Keiper & Al., 2017; Marder & Al. 2019; Kordyaka & Hribersek, 2019).

#### **2. 1. 4. League of Legends and the renewal of eSport**

Developed in 2009 by California-based developer Riot Games, LoL comes in a sector in crisis, on which RTS game StarCraft II and FPS game Counter-Strike had reigned until then. But the professional video game industry, with the first eSport competition scene created just a decade earlier, was just emerging from a major financial panic. The previous year, the Championship Gaming Series, an international eSport league, was closing its doors after only two years of existence and tens of millions of dollars of investment. After the shock, however, 2009 is the year of eSport renewal, driven by the development of social networks and streaming video, which allow games to be broadcasted all over the world (Lewis, 2015).

In 2009, professional e-sport competitions were most often organized by structures external to game publishers, such as Dreamhack or previously mentioned ESL. After launching League of Legends, Riot Games therefore decided to leave the task of organizing tournaments to others. But, little by little, the publisher took more and more control of the organization of official competitions - to the point of managing them entirely today. "They have modelled the structures, organization and scenography on the way traditional sport works," says Fabien Devide, CEO of Vitality (a French eSport organization, with League of Legends teams competing at the national and regional level) (Reynaud & Duneau, 2020, p.3-4).

In traditional sport, different actors are involved in the organization and broadcast of the competition: to this day, three different broadcasters own the American National Basketball Association's diffusion rights (Lewis, 2014). As opposed, Riot Games both controls the rules of the game (in fact, these are frequently modified thanks to bi-monthly updates) and the organization of competitions, in addition to broadcasting the events on their own Twitch.tv channel. To illustrate this impressive control over broadcasts, we could quote a public message of John Needham, Global Head of LoL eSport, addressed to competition broadcasters, in which

he asks them to ‘refrain from discussing sensitive topics’ (Kelly, 2019). Regarding the aforementioned definition of Suits (2017), we could argue that LoL eSport is institutionalized, and that these institutions are under direct Riot Games’ control.

On the LoL's current professional scene, some countries have their own national league, in which local teams compete against each other: it is notably the case in France since the creation of the “LFL” (for Ligue Française de League of Legends) in 2018.

At the highest level, the best players compete in regional leagues and championships (such as the League of Legends European Championship or LEC in Europe). This in the hope of qualifying for the World Championships. Starting in 2013, each Worlds final was introduced by a musical and visual show, directly inspired by the American Super Bowl tradition: if the vast majority of LoL eSport audience watches the competition via its live-broadcast, some lucky spectators have the opportunity to witness the event as it takes place, not losing a split second of the competition thanks to the giant screens which equip the arenas (Hamari & Sjöblom, 2017).

During the opening ceremony in 2017, an augmented reality dragon was seen flying over the 80000 spectators of the National Stadium in Beijing (Reynaud & Duneau, 2020). The 2019 League of Legends’ World Championship show included an Augmented Reality concert based of hip-hop band “True Damage”, a virtual group made of five LoL champions. In addition to this performance, the show was created in collaboration with Nicolas Ghesquière, head of fashion of the French luxury brand Louis Vuitton (Webster, 2019; Stubbs, 2019).

In order to increase the revenues of competitive LoL teams, Riot Games decided in 2016 to imitate its competitor DOTA 2’s Compendium (Zarrabi & Jerkrot, 2016), by resorting to use a special kind of crowdfunding: during some events such as the World Championship, 25% of revenue generated by sales of special in-game items are added up to the prize pool. In 2016, thanks to this strategy, the total prize pool nearly doubled, reaching 4 145 000 dollars. (Volk, 2016). By doing so, Riot Games creates a sense of ownership by allowing LoL fans to support their favourite teams (Gera, 2014). In 2019, the LoL Worlds Championships accumulated 137 million of hours watched, while the DOTA 2 equivalent “The International” only reached 88 million (according to eSports analytical firm Esports Charts, quoted by Fitch, 2020).

To conclude this section, it is important to note that, according to Newzoo, the fanbase of League of Legends is divided as follows: 26% of fans are only viewers, 32% are only players, while the remaining 42% combine the two activities (Statista, 2019).

### 2. 1. 5. Motivations to watch eSport

An interest in eSports is born out of an initial interest in video games, eSports being considered as a subset of the wider gaming environment (Lee & Schoenstedt, 2011, quoted in Macey & Hamari, 2018). Hence, the question rises as to why certain people would rather spectate other people play than competing themselves. Several studies have investigated and identified reasons why people spectate others watch video games, an activity that is not limited to but encompasses eSport.

Cheung & Huang (2011) focused on the profile of spectators and determined nine different personas by gathering user-shared stories related to their consumption of StarCraft II eSport. This study unveils the diversity of spectators' expectations: while the excitement of some users was linked to their capability of learning the game and understanding complex game strategies, some others simply enjoyed the communal aspect of the competition, and like watching the game as a group. This notion of community is reminiscent of how football spectators may feel in a stadium. Similarly, Hamilton & Al. (2014) argue that streams operate as "third places", a concept established by Oldenburg (1997) which describes public spaces, in which people engage in sociability for the purpose of forming and maintaining communities.

According to certain some researchers, eSport competitions are more engaging and immersive than traditional sports events (Pizzo & Al., 2018). The increased immersion may result from two innovations which allow greater proximity between the players and the spectators, and between the spectators themselves. Indeed, a live-broadcasted eSport event often includes a camera angle focused on the athletes' facial expressions, making spectators aware of their reactions while the in-game strategies unveil (Hamilton & Al., 2014). A second tool which would result in greater immersion is the online chat, located on the right side of the live broadcast, and used to communicate with other spectators or cheer for favourite teams and players (Hamari & Sjöblom, 2017). However, it has been proven that the greater the number of spectators there is, the more limited the social interaction is: past a certain point, a too crowded chat makes healthy conversations impossible (Xiao, 2020). While comparing gratifications for engagement between live attendants and online eSport spectators, Sjöblom & Al. (2019) indeed confirmed that live events were more suited than their counterparts to facilitate social interaction between spectators.

Considering that early studies on eSport have demonstrated that spectators share similar motivations than traditional sports enthusiasts (Cheung & Huang, 2011), the decision by Hamari & Sjöblom (2017) to investigate motivations for consuming eSports by adapting

measures designed for traditional sports seems only logical. The initial Motivation Scale for Sports Consumption (often referred as MSSC) was designed by Trail & James in 2001, and has gone through revisions since (Trail & James, 2012). It now includes ten dimensions, including “Escapism”, “Social Interaction”, “Knowledge Acquisition”, which echo aforementioned research, “Aesthetics”, “Vicarious Achievement” and “Novelty”. An alternative measurement instrument was developed by Seo & Green (2008), but the original MSSC is a more established measure, having already been used in various studies and different contexts (Sjöblom & Al., 2019), and has therefore been selected for this study.

## **2. 2. The Free-to-Play Business model**

### **2. 2. 1. Definition and history**

As mentioned in the introduction, Kumar (2014) offered a simple and clear definition of what the freemium business model consists of: it “refers to a product/pricing structure where the core service is free, but revenue is generated through the sales of additional products and services” (quoted in Hamari, 2015, p. 300). The free-to-play business model derivates from the freemium idea, which is present in sectors as varied as music (e.g. Spotify, software, data storage, or video platforms (e.g. YouTube, Twitch) (Hamari & Al., 2017). An analysis of the top 300 apps in the Apple “App Store” has shown that freemium is the top choice for many online services, including mobile games (Alha & Al., 2016).

According to Alha & Al. (2014), contemporary F2P games appeared in the late 1990’s and early 2000’s, but spread heavily after Facebook opened its platform to third party application in 2007, notably social games which employed the F2P business model and were easily distributed thanks to the social network’s virality. Games developed by Zinga and King such as FarmVille or Candy Crush Saga conquered millions of users at the time, despite being often criticized for their game design (Alexander, 2013). It is about that time that PC games with downloadable clients utilizing the F2P business model started appearing. The online video game on which this study focuses, League of Legends, was indeed released on PC on October 27<sup>th</sup>, 2009 in North America (Kolan, 2011).

The F2P model offers two main advantages over its competitors: firstly, it attracts a wide range of players as they can download and access the whole game for free (Civelek, Liu & Marston, 2018) which they can then recommend it to their friends if they enjoy it. This network effect functions even if players do not purchase anything (Shen & Williams, 2011). Secondly, as the game does not require a heavy upfront payment (in opposition to console

games), the players are offered a myriad of digital products and services, often at a reasonably small price (Yoo, 2015), which allows flexible price points, suitable for different purchasing powers and willingness to invest in the game (Alha & Al., 2014).

Nojima (2007) compared three types of business models (prepaid package – one-time purchase, subscription based and per-item billing) and their effect on Japanese MMO players' motivation (MMO stands for Massively Multiplayer Online video games, of which MOBAs, the League of Legends gaming genre, is a subset). Not surprisingly, findings indicate that there is a significant relationship between monthly fixed fee and continuous play (as long as there is social motivation for the player) but that the game's profitability could be at risk if the launch has failed to attract enough player base. In contrast, per-item billing (or F2P model) is successful in gathering numerous players and has “an opportunity to make high payment amounts from immersed users”. The immersion of F2P players is an essential concept which will be addressed later in this study.

Mentioning other business models may seem irrelevant in this section, but it is useful for understanding the superiority of the F2P model, and why League of Legends chose to select it as soon as 2009. In a long dossier published in the specialized press, Tim Sweeney (one of the founders of Epic Games, a developer notably known for its Gears of War franchise) talks about the successive “metamorphoses” his company faced amongst the last two decades, and how he realized that “the old model wasn't working anymore” (Crecente, 2016, p. 5). While the first Gears of War game was very profitable (100 million dollars of revenue for a 12 million development budget), profits continued to shrink as the cost to make each proceeding game went up. Although benefiting from an exclusive distribution on Microsoft's Xbox, Epic Games calculated that, by making a fourth opus of the GoW series, they could at best break-even (Crecente, 2016). Taking inspiration “ever-evolving game” supported by a F2P business model, Epic Games soon launched Fortnite, the highest-earning F2P title of 2018 and 2019 (Handrahan, 2019).

Slowly but surely, the F2P business model rose as a viable alternative to classic ones (Xerfi, 2020). Team Fortress 2 is a second example of successful business model swap: originally launched as a retail game in 2007, the developer and publisher Valve decided in 2011 to make its online first-person shooter completely free, consequently increased its revenues by a factor of twelve thanks to players' in-game purchases. According to Valve's Joe Ludwig, Team Fortress was well suited for this business model transformation, as the strategy of

building regular and large updates to maintain player interest was adopted as soon as 2008 (Miller, 2012).

Hamari & Lehdonvirta (2010) indeed explain that one way of addressing the long-term attractiveness of online games is to introduce regular updates and to add new content. The purpose of these updates is dual: on one hand, the developers get an opportunity to “alter existing content”, for example to restore the balance of the game by diminishing the statistics of said item or character considered problematic by players. On the other hand, updates serve a marketing purpose: World of Warcraft (a notorious MMO-Role Playing Game developed by Blizzard) frequently introduces new content via updates, according to traditional seasonal events, such as Valentine’s Day, Halloween or Christmas.

In League of Legends, updates come as the form of “patches” and are released every two weeks. With each patch iteration, a special note written by a member of the Riot Games development team explains in detail what are the modifications to the existing game, and why they occur. In addition to “balance notes”, new paid content is added, which creates an environment in which players will log into the game regularly to see which changes have been made, and if there is some interesting purchasable content which meets their expectations (Freese, 2012).

Of course, the F2P business model only functions if players regularly come back to the game: Alha & Al. (2014), when reviewing their qualitative interviews of game professionals, confirm that “F2P games have to be good to get people to continue to play them and to pay for them” (p. 4). Similarly, Nojima (2007) finds that players that buy items report higher immersion in a game (quoted in Hamari & Lehdonvirta, 2010), while Cleghorn & Griffiths (2015) indicate that time investment is a positive predictor of purchase intentions: as time goes by, users increase their perception of the online game’s value.

This reliance on users’ continuous intention to play raises several questions: what makes a game “good and immersive”, why do people play them and whether if League of Legends can be qualified as such.



### 2. 2. 2. Why do people play?

Playing video games, as a leisure activity, is a form of motivated and voluntary action (Jansz & Tannis, 2007). As explained before, the success of the F2P business model is linked on the motivation of its users, this motivation derives from what players find enjoyable.

Bartle (2004) argue that it is therefore necessary to understand what players expect from their gaming sessions. The same author proposed four different type of Multi-User Dungeon (e.g. Dungeons & Dragons) players, based on the reasons why they engage with the content of the game (Bartle, 1996).

This classification was later used by Yee (2007) in the context of MMORPG to create a typology of players. Results indicate that players can be divided into three main categories: *social players* are attracted by opportunities of interacting with other members of the online game, *achievement-seeking* players have a strong focus on competition and want to challenge themselves and others, while *immersion players* enjoy exploring new worlds, and escape their daily routine or real-life problems. As gaming is a leisure activity, it is not surprising that these motivations are reminiscent from the ones included in the eSport MSSC (Hamari & Sjöblom, 2017). Schell (2008) also emphasises the importance of social interaction in the motivations to play, arguing that the majority of games ever created are designed to be played with or against other players. In the same article, he acknowledges that players sharing a similar interest are eager to form communities, thus fulfilling the social need to be part of something. This emotional connection to others may be sufficient to keep players interested in the game for a long time.

Each category of player has a different way of reaching enjoyment, of creating a its own positive experience. The notion of flow (Csikszentmihalyi, 1975) represents a helpful framework for investigating how leisure activities produce positive outcomes for their users.

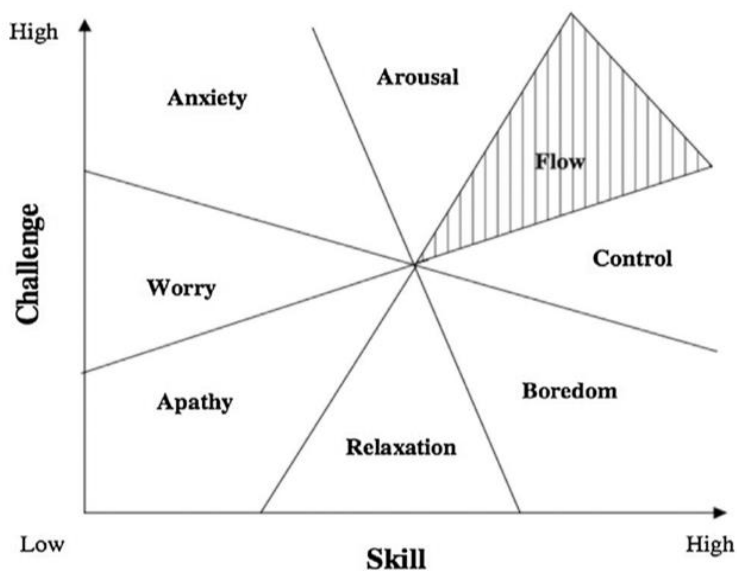
Flow was originally defined as “the holistic experience that people feel when they act with total involvement” (Csikszentmihalyi, 1990, p.55-56, quoted in Lee & Tsai, 2016, p. 604) and is often referred as the “optimal experience state”. People can experience flow in a wide variety of activities, such as rock climbing, painting or chess (Nguyen, 2015, p. 23). When someone experiences flow, he demonstrates deeper levels of concentration, is highly involved with the task at hand, and wants to maintain this state (Csikszentmihalyi, 1990). While reviewing the concepts of flow and immersion in the gaming literature, Michailidis & Al.

(2018) even concluded that the two terms can be used interchangeably, until further studies or evidences differentiate them.

While the consequences of flow are usually agreed upon, there are many factors that are considered to influence flow (Refiana & Al., 2005). The original definition comprises four components: control over the task at hand, focused attention with no other distraction, curiosity, and intrinsic interest (quoted in Hsu & Lu, 2004). High levels of skills and control, when matched by adequate levels of challenge and arousal, have been also been considered important predictors of Flow (Ghani & Despande, 1994; Hoffman & Novak, 2000; Abuhamdeh & Csikszentmihalyi, 2012). Addressing the importance of this relationship in the context of video gameplay satisfaction, Sepehr & Head (2018) confirmed that flow state would not be experienced if challenge and skill aren't carefully matched.

As explained by Johnson & Wiles (2003), skills and challenges both need to be at a high level, however: if the challenges are far greater than the skills, the player will experience anxiety, and in the opposite case, boredom. An illustration of the Eight State Flow Model is provided in Figure 1.

*Figure 1 - Eight State Flow model in Sepehr & Head (2018)*



When considering this notion in the context of our study, we think of the importance of player versus player matchmaking in League of Legends (Decelle & Al., 2015), which brings an answer to the need for an adequate level of challenge to generate player motivation (Baldwin, 2014). In LoL, the matchmaking system allows you to face opponents which share the same level as you, thus guaranteeing an uncertain outcome every time a player starts a game: this system is actually based on the Elo chess rating system depicted in Abuhamdeh &

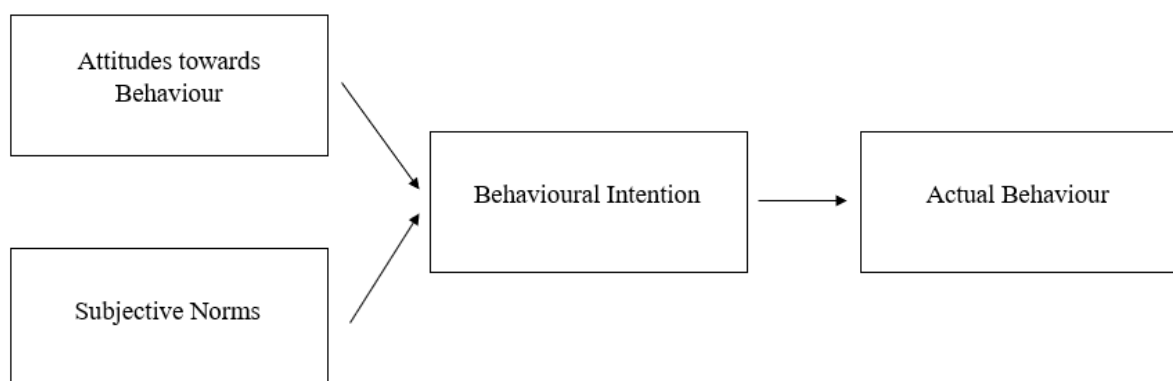
Csikszentmihalyi (2012). Another significant contribution of Riot Games to this “challenge-skill” dilemma would be the F2P game’s efforts to welcome and guide beginners, thus quickly improving their base knowledge and understanding of the game (Gilliam, 2018; League of Legends – How to Play Webpage, 2020). On this matter, Pagulayan & Al. (2003) argued that in-game tutorial feedback can be used to allow quick progression in learning the basic mechanics for playing (in Sweetser & Wyeth, 2015).

Concluding this section of flow, it is important to address the difficulty to embrace in such a short literature review the complexity of this psychological state: Koufaris (2002, p. 207) stated “[the construct of flow] is too broad and ill-defined due to the numerous ways it has been operationalized, tested and applied” (quoted in Choi, Kim and Kim, 2007, p. 227, and Hoffman & Novak’s review of Flow Online, 2009, p. 26).

Another important field of research concerning motivations to play video games is the use and the adaptation of adoption theories. It seems only natural, as adoption is the first step and a much-needed condition for a product/service commercial success. By conducting a literature review on the reasons for using games, Hamari & Keronen (2017) found that this topic “has been approached from variety of theoretical perspectives, such as the technology acceptance model and the theory of reasoned action [...]”.

The Theory of Reasoned Action (or TRA) was developed by Fishbein & Ajzen (1975), and consists in explaining that an individual’s behaviour is predicted by his or her intention to perform the behaviour, and that the behavioural intention is determined by the individual’s attitude toward the behaviour, and by the individual’s “Subjective Norms” (quoted from Wu & Liu, 2007). “Subjective Norms” refer to an “individual’s perceived social pressure of performing or not performing a behaviour” (Ajzen & Fishbein, 1980; quoted in Xiao, 2020, p. 102). The mechanics of the TRA are displayed in Figure 2. In subsequent research, notably in

*Figure 2 - Theory of Reasoned Action model adapted from Ajzen & Fishbein (1980)*

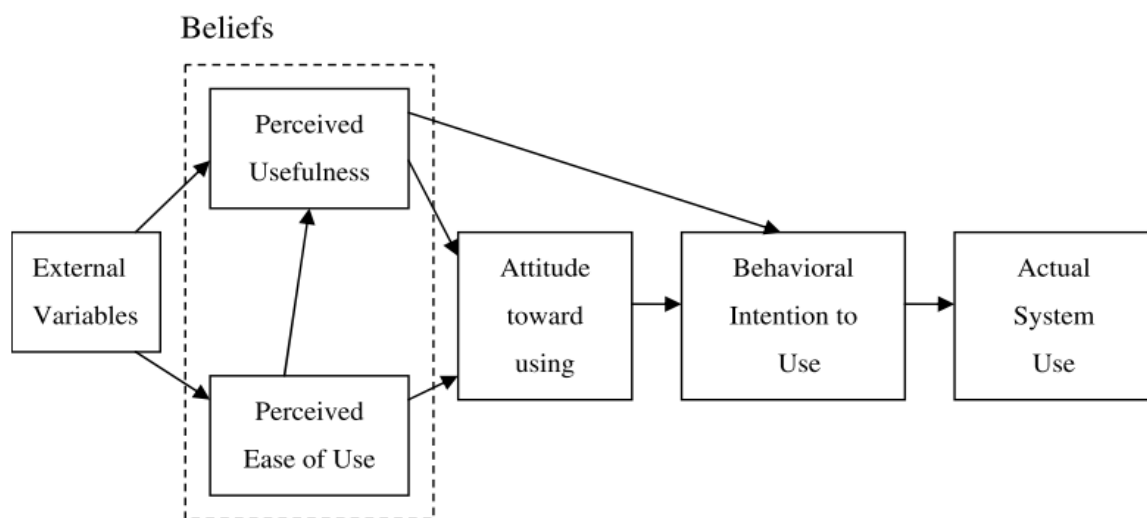


adaptations of the TRA, the term “subjective norm” has often been replaced by the term “social norms”.

As the TRA is considered as a robust model for explaining human behaviour, it has been used as the theoretical foundation of subsequent adoption models (Guo & Barnes, 2007).

The Technology Acceptance Model (or TAM) is an adaptation of the TRA and was developed by Davis (1989) to explain the acceptance of new technologies. In the original TAM, “Perceived Usefulness” (PU) and “Perceived Ease of Use” (PEOU) respectively represent an individual’s beliefs about the usefulness and the effortless operation of a technology, beliefs that influence his/her attitude toward using it, and his/her behavioural intention to use it, which finally determine its adoption by the user. PEOU is also found to affect PU, which in turn affects directly both attitude towards using and behavioural intention to use. The mechanics of the original TAM are displayed in Figure 3.

*Figure 3 - Technology Acceptance Model adapted from Davis (1989)*



However, the “Perceived Usefulness” construct, originally designed to measure “the degree at which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989, p. 320) has been considered poorly fit for leisure activities such as gaming. In 1992, Davis & Al. PU was therefore replaced by the construct “Perceived Enjoyment”. Hsu & Lu (2007) have preferred PE over PU, as the main purpose of participating in online games is to experience pleasure, not to achieve performance. In a similar adaptation of the TAM model, Heidjen (2004) showed that Perceived Enjoyment has been regarded as the “primary driver of use for hedonic systems such as games” (quoted in Hamari, 2015, p. 300), demonstrating its superiority over the PU construct in this specific context.

Lou, Luo & Strong (2000) extended the TAM by adding the notion of “Critical Mass” (CM). This concept refers to the idea that “a certain threshold of participants has to be crossed before a social movement explodes into being” (Oliver & Al., 1985, quoted in Lou, Luo & Strong, 2000). Hsu & Lu (2004) suggest that CM has a significant influence on user’s attitude towards the acceptance of technologies, their model (also an adaptation of the TAM) explaining 80% of users’ acceptance of online video games. While commenting their findings, the authors argue that perception of CM has the potential of generating a virtuous circle, called the dynamic loop (Hagel & Armstrong, 1997): the more users an online game has, the more it generates user experience, which attracts more users by the way of positive word-of-mouth or advertisement.

In addition to this “social factor”, the authors bring back the notion of “subjective norms/social norms” from the original TRA (Fishbein & Ajzen, 1975) and hypothesize that subjective norms would also have a positive relationship with attitude towards using. Similarly, Lu, Yao and Yu (2005) argue that the social influence of peers may contribute to shape an individual estimation of his ability to use a technology, and therefore hypothesize that SN influence perceived ease-of-use (PEOU). Finally, in a more recent study on continued use intention of online games, Chang & Al. (2014) pose CM as a determinant of SN, and showed empirical evidence of a significant relationship between the two social factors.

In a second study, Hsu & Lu (2007) modified the TAM with factors associated with loyalty towards online games communities, thus adapting the model to study post-adoption behaviour. Indeed, while the TAM was initially developed to understand technology adoption (pre-adoption behaviour), it has now also been widely used as a post-adoption model, following the research initiated by Bhattacharjee (2001). Nabavi & Al. (2016) argue that the TAM was the second most used model to measure continuance intention amongst the 2001-2014 period.

In addition to Hsu & Lu (2004, 2007), other researchers have used the TAM to research continuance intention of online video games (Lee & Tsai 2010; Mäntymäki & Salo, 2011). For example, Lee & Tsai (2010) used the construct of continuance use intention in their adaptation of the TAM. They define CUI as a subset of the customer loyalty construct, which includes several other dimensions such as willingness to recommend the use of a product/service to others, or positive word-of-mouth. In our review of the academic literature on the matter of online games, we observed that the concepts of continued intention of use and customer loyalty were equally preferred as the final point of post-adoption models: both describe an on-going process, the a practice of a hobby that extends over a long period of time. In classic distribution models of online games, such as the subscription-based model, customer loyalty is a

consequence of CUI and purchase behaviour (Mäntymäki & Salo, 2010). However, in the context of F2P online games such as LoL, it is arguable that non-paying users and paying users alike can be loyal to the game (when they recommend the game to peers and draw new users, for example). Thus, in this study, we follow Balakrishnan & Griffiths (2018), by selecting customer loyalty as a post adoption mediator between attitude towards using (pre-adoption) and purchase intentions of virtual items.

The concept of customer loyalty is crucial in the context of F2P games: as games have no entry pricing, there are no switching costs between different competing online games (Hamari & Al., 2020). Thus, if it is important to understand what attracts players towards the practice of an online game, it is crucial to determine which factors lead to their retention.

It is important to note that studies focused on understanding online games' customer loyalty also used the Flow construct (however defined and measured in different ways), including Choi & Kim (2004), Huang & Hsieh (2011), Chang & Al. (2014), and Su & Al. (2016).

Choi & Kim (2004) results indicate that players show a higher level of loyalty if they have flow state, and that an optimal experience derives from appropriate personal and social interactions. Similarly, personal accomplishment and social interaction have been found predictors of time spent playing (Johnson, Gardner & Sweetser, 2016). We could see in the aforementioned League of Legends matchmaking system a way to balance the challenge and allow every player to reach his own personal accomplishment.

However, it is notable to say that Riot Games has had several issues in the past few years in regards of social interaction within League of Legends. As soon as 2012, Riot Games already took knowledge the online toxic behaviour of some players (McWerthor, 2012). Kou & Gui (2014) infer the presence of these anti-social behaviours to the high competitive pressure of the matches, and to the complexity of the task at hand: players who do not play with their friends have to rely on strangers, and come up with a winning strategy on a rather short period of time. In multicultural gaming servers such as the EU West one (for European – Western), it is not uncommon to see three or four different languages in the written chat, the language barrier adding up to this communication challenge. Kou & Nardi (2013) describe Riot Games' efforts to create "The Tribunal", a system by which the community polices itself, allowing some players to judge ones that have been reported for their misbehaviour. To conclude this section on a positive note, we could argue Riot Games' late introduction of in-game voice chat in 2018

(Mickunas, 2018) was a good step towards “providing appropriate communication interaction” for players (quoted in Choi & Kim, 2004).

### **2. 2. 3. What are virtual items and why are players purchasing them?**

Virtual items sales as a revenue model was established as soon as the early 2000’s (Hamari & Lehdonvirta, 2010). Since then, virtual items – or virtual goods, have been the subject of various academic contributions. In this section of the literature review, we will focus on the definition and typology of virtual items, on the determinants of purchase intentions for F2P games’ customers, and how they are represented and marketed within League of Legends.

At first, virtual items were simply digital forms of physical goods (e.g. a song digitalized in the Mp3 format, or an eBook) (Lehdonvirta (2009). The same author argues that it is more accurate to see virtual items as “a new independent category of goods”, sometimes inspired by real life goods, but not virtual versions of them. To clarify this distinction between digital goods and normal goods, Bhattacharjee & Al. (2011) state five unique and distinctive features of virtual items:

- Exist in digital form (electronic, non-physical);
- Durable since there is no wear and tear;
- Close to zero reproduction or distribution cost, though possibly major product development and marketing costs;
- Capable of being altered or replicated by consumers;
- Nonrival in that consumption by one individual does not inhibit nor preclude consumption by another.

In the context of online video games, virtual items refer to the digital in-game goods which are usable within the game environment (Hamari, 2015). Similarly, Yee (2007) proposed that the motivations for purchasing virtual items may be viewed as a subset for those for playing (in Guo & Barnes, 2012). Lehdonvirta (2009) investigated the characteristics of virtual items, and identified three categories of virtual item purchase drivers: functional drivers affect in-game performance or character progress, hedonic drivers refer to items that enhance the aesthetic appeal of your character, while social drivers concern items that are rare or display individual difference to other players.

Acknowledging the fact that developers, in order to sell more in-game content, were increasingly willing to tweak the design of their games (Hamari & Lehdonvirta, 2010), Hamari & Al. (2017) conducted a study to measure concrete in-game purchase motivations. Their

findings indicate that the purchasing reasons converge into four dimensions: 1) Unobstructed play, 2) Social Interaction, 3) Competition, and 4) Economic rationale.

Other researchers have focused their efforts on searching for predictors of purchase intentions of virtual items (PIVI) (Guo & Barnes, 2009). In their literature review on why people buy virtual goods, Hamari & Keronen (2016) state that variables such as attitude, subjective norm and PEOU are among the most represented, adoption models being the most frequently used theoretical backgrounds for these studies. Accordingly, continuous use intention and customer loyalty towards online video games have been found a significant predictor of PIVI (Mäntymäki & Salo, 2011; Guo & Barnes, 2012; Balakrishnan & Griffiths, 2018), as well as time investment (Cleghorn & Griffiths, 2015) or engagement (Cheung & Al., 2015).

While everything said above is true when it comes to defining virtual items as a whole, or to explain reasons for purchasing them, it is not necessarily applicable in the context of every video game that employs in-game purchases. As stated above, virtual items have been an integrant part of the video game industry since the early 2000's, it is therefore not surprising that their use evolved over the years. Indeed, as often in the video game industry, practices regarded as problematic have often been criticized by players and the gaming press. In 2007, Electronic Arts was forced to remove in-game purchases from its *Star Wars: Battlefront II* game, after fans began complaining that they had to spend no less than 80 dollars to unlock playable characters such as Darth Vader (Stauffer, 2017).

The criticism and the heavy resistance of the players has been addressed by academic research (Alha & Al., 2014; Hamari, 2015; Alha & Al., 2018). In particular, the matter of functional virtual items has been regarded as highly incompatible with the competitive nature of online games (Hamari & Keronen, 2017). These items grant in-game advantages to the paying users (you could for example buy a better sword for your character) and are accused of unbalancing the game (Paavilainen & Al., 2013). Past studies have discussed how the inclusion of functional items in games decrease players' engagement, immersion and sense of flow (Hamari & Lehdonvirta, 2010).

Lin & Sun (2011) explain that functional items and their perceived unfairness disrupt the players' "magic circle" (concept developed by in 1938 by Huizinga, further elaborated and defined in 2004 by Salen & Zimmerman as "a special place in time and space created by a game"). This concept is crucial to the players' sense of immersion, and the authors argue that paid advantages and "worries over tangible economic resources" violate the insulation of the



gaming world, a leisure activity used to escape real-life pressure. Bartle (2004) continues on by stating that “a high level character [and its achievements, equipment, etc] is a marker of player status”: if a high level item is worn by a player who has not ‘earned’ it, this annoys the players who invested time and efforts towards its obtention, and renders their efforts to compete useless. The author concludes by saying that “when poor people can’t even role-play being rich, they’re going to be disheartened”. More generally, functional items are accused of transforming F2P games into “pay-to-win” games, that reward players according to their financial investment rather than for their time and dedication.

In an attempt to maintain equality between players (and to avoid their frustration and criticism, detrimental to their retention), some F2P games have come up with alternatives to the original model described by Lehdonvirta (2009). For example, League of Legends and DOTA2, the two most successful MOBA titles, decided to strictly monetize their game by means of non-functional virtual items, such as “skins”, which are additional appearances for your characters (Marder & Al., 2019). They do not offer in-game advantages, and are purely aesthetic (Lin & Sun, 2011).

In their article, Marder & Al. review different interviews of “hardcore and ultra-hardcore” LoL players on what motivates them to engage in PIVI. Findings align with Lehdonvirta’s (2009) attributes of virtual items, with motivations ranging from hedonic to social purposes, such as “Gifting” (virtual items to friends), “Aesthetics” or “Social Distinction”. Social motivations have been found prominent in the context of LoL players’ PIVI. A good example is stated in the article: a group of friends decided to purchase a selection of skins from a common theme (a set of futuristic skins inspired by Tron had been released under the name “Project Skins”, for champions such as Leona, Yasuo, etc), and one of the players stated that it “made [him] feel [he] was more part of the group”, and that this combined purchase also served the purpose of intimidating opponents.

However, the authors also noticed that a small number of participants expressed that their purchases were driven by utilitarian purposes: some players saw purchase of virtual items as a “calculated necessity in order to keep the game alive”, or as a way of “giving back to the developer” in exchange of numerous free hours of enjoyment. The same logic is at hand with the sale of special items to support the League of Legends World Championship prize pool, mentioned earlier (Volk, 2016).

A similar motivation “Supporting a good game” can be found in Hamari & Al. (2017), as a subset of the fourth dimension “Economic rationale”, along with “Special offers” and

“Reasonable pricing”. LoL offers discounts on a selection of skins every week, and also presents a customized set of discounts (according to the champions the player uses the most) from time to time. The authors argue that in the context of F2P games, players might be enticed to engage in purchase of virtual items if they perceive a deal to be cheap, especially if the proposed deals are limited in time. The same mechanic applies to seasonal sales: in League of Legends, themed content introduced for Christmas, Chinese New Year, Halloween and other events is only purchasable during a small period of the year (see Hamari & Lehdonvirta, 2010). This limited time offer echoes the notion of artificial scarcity, one of the seven strategies to drive value generation in F2P games addressed by Flunger & Al. (2017).

To purchase a virtual item, a LoL player first has to invest real money into the game. Indeed, LoL virtual items are purchasable through a virtual currency named Riot Points (or RP), which is exclusive to the game. Virtual currencies have been under the scrutiny of researchers for their common use in virtual worlds (Guo & Barnes, 2007), in mobile F2P games (Civelek, Liu & Marston, 2018), and for the players’ acceptance towards virtual economies in the Web 2.0 era (Shin, 2008).

LoL allows player to purchase RP by using their debit card, prepaid cards, PayPal account, etc. The amount of RP purchasable per unit of currency differs according to the amount purchased (RP is sold in fixed amounts, ranging from 310 to 7200) and to the payment method as different charges apply<sup>1</sup>. Skin are additional appearances for a specific character (or champion), and their prices differ according to their quality or “tier” (Deluxe, Epic, Legendary, Ultimate, etc.), ranging from 390 to 3250 RP, with most of them costing 1350RP (roughly 10€).

Other virtual items include “chromas” (which are colour variations of existing skins), champions (new players have access to eight characters, having more playable champions in your collection broadens your strategic options and adds up to the replay capability of the game), rune pages (sets of selectable statistics, having numerous rune pages allows to quickly swap between configurations instead of modifying the same template), emotes (which allow you to communicate with other players via little humoristic cartoons), etc.

A dual currency system is at use in the LoL marketplace: while many virtual items are purchasable using a second currency named Blue Essences (formerly known as Influence

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<sup>1</sup> For purposes of indicating how many RPs a euro allows to get, we computed an average using the different options available while selecting debit card payments: a euro equals to roughly 137 RP.

Points) which are obtainable by playing, customization items such as skins are only unlockable via RP. Blue essences allow non-paying players to acquire all the playable characters, however at a rather slow pace. The use of double currency model in F2P games has been discussed by Alha & Al. (2014), which refer to them as “soft currency” and “hard currency”, with the latter being tradable against real money and allowing access to premium content.

Finally, two categories of virtual items are worth noticing: chests, which the player opens to obtain a random customization item which he does not previously owns, and season passes, which assigns weekly missions to the player and rewards him on completion with exclusive content (e.g. Qiyana & Senna Louis Vuitton Prestige skins – Louis Vuitton, 2020). The first category has traits with gambling activities (Fishman, 2019), while the second has the potential of generating numerous hours of gameplay, as the user wants to maximize the pass’ “profitability” by achieving all offered missions.

Finally, it is important to note that these virtual items are non-transferable between players, something in opposition with the original definition of digital goods characteristics (Bhattacharjee, 2011). By making skins and other collectibles linked to the player account, Riot Games forbids the reselling of virtual items, a practice quite common for online games and virtual worlds (Nazir & Lui, 2016). In addition, account selling is also prohibited: this practice results in the banishment of the account, at the detriment of the buyer (Riot Games Support, 2014). A set of screenshots from the LoL virtual items shop illustrating the previous section is provided in Annex A.

## Chapter 3 - Preliminary conceptual model and research hypotheses

As a consequence of its manifest economic success, the F2P business model has been the subject of numerous academic researches in the past decade. In parallel with the democratization of this business model, the video game industry has witnessed a renaissance of competitive tournaments. Seeing eSport as an opportunity, most F2P games, including League of Legends, began organizing and broadcasting competitive events, to the delight of millions of players. However, with the exception of Törhönen & Al. (2020), scarce research has been done to bridge eSport consumption and video game consumption, be it in terms of time spent on the game or purchases of virtual goods and other economic impacts.

It is this gap in the literature that this dissertation intends to start filling. The present study focuses on understanding whether if motivations to watch eSport can be associated the Technology Acceptance Model, this model having proven its robustness to explain pre-adoption and post-adoption behaviour of online gaming in previous researches (Hsu & Lu, 2004, 2007; Lee & Tsai, 2010; Mäntymäki & Salo, 2011, etc.). Following Hsu & Lu (2004), we deemed important to extend the TAM with two social influence concepts, Subjective Norms and critical mass, in the context of an online multiplayer game such as LoL. Additionally, Flow, a widely model of enjoyment and immersion (Sweetser & Wyeth, 2015) is posed as a determinant of Customer Loyalty. Finally, we pose Purchase Intention of Virtual Items as a consequence of Customer Loyalty. In the next section, the research hypotheses are detailed and explained.

### 3.1. Hypotheses development

The Motivation Scale for Sport Consumption (Trail & James, 2000) comprises the main aspects, based on psychological and physical needs, that drive spectator consumption of traditional sport. The following hypotheses use a selection of six constructs of the MSSC, adapted towards consumption of eSport, following Hamari & Sjöblom (2017).

Knowledge Acquisition refers to the degree to which media consumption, here the consumption of LoL eSport, allows the spectator to gain knowledge. In traditional sports, KA serves two purposes: learning about the players and the teams (Wenner & Gants, 1998) and collecting information useful in conversations about the said sport (Melnick, 1993, quoted in Hamari & Sjöblom, 2017). The same rationale applies to eSport consumption, as shown by Hamilton & Al. (2014), who explain that watching a stream allows spectators to gain skills and

knowledge about the game, from both the athletes and the online community. Cheung & Huang (2011) identified nine personas of StarCraft II spectators, and two of them seem to fit under the category of knowledge acquisition driven spectators: the “Curious” is fascinated with understanding the basis and depth of the game, and engaged with the broadcast as long as there is more to learn, while the “Pupil” displays a similar profile, also thriving to learn, but aims at using gained knowledge to improve his own performances.

LoL, as an online multiplayer video game, is difficult to learn and nearly impossible to master, some characteristics shared with many MOBA titles (Mora-Cantalalops & Sicilia, 2018). As of January 2019, the video game included 148 champions (playable characters), with dedicated competencies, strengths and weaknesses. With so much complexity even in the variety of characters available, many players (even non-beginners) feel frustrated when they suffer a defeat as they do not understand the reasons for it. Becoming a better player in League of Legends implies working on the ‘micro gameplay’ (individual skillset, meaning how well you control your character) and the ‘macro gameplay’ (teampay skillset, meaning how well you understand the game, design and adapt strategies) (Team Dignitas, 2017). Following Hamari & Sjöblom (2017) who state that strategies and tactics of eSports are easily reproduced, we argue that spectators watching LoL eSport with the intention of gaining knowledge are likely to find the game easier to play, and that an increased knowledge is likely to make the game more enjoyable. Thus, we formulate the next two hypotheses:

H1: Knowledge Acquisition is positively associated with Perceived Ease of Use

H2: Knowledge Acquisition is positively associated with Perceived Enjoyment

Vicarious Achievement refers to the fulfilment of social prestige and a sense of empowerment an individual can experience when witnessing the achievement of the team or player he or she supports (Trail & Al., 2000). VA comprises a strong social component and has the capacity of bringing enjoyment to the spectators which experience a sense of belonging to a community, that feel like they are part of the team. VA is therefore relevant to explain the strong emotional connectiveness of the eSport fandom with the game titles, teams, or players they support (Taylor, 2012). Hamari & Sjöblom (2017) explain that, due to the heavy presence of eSport athletes on social networks and the fact that many team / players broadcast their training sessions, eSport spectators experience a deep connection with their favourite team, thus leading to a high sense of VA. In LoL, some cosmetic virtual items such as champion skins or summoner icons are designed in direct partnership with eSport teams, and are used by fans to show other players who they support. In addition, some players decide to select a name that

includes a reference to, or the name of the team they are bonded to. Team identification has also been addressed as determinant of social connection (Wann & James, 2019). Based on this proximity between LoL eSport spectators and the team they support, it could be assumed that the enthusiasm procured by vicarious achievement could be transferred to the game itself, making it more enjoyable to play. Thus, we formulate the next hypothesis:

H3: Vicarious Achievement is positively associated with Perceived Enjoyment

Aesthetics refer “to the elements of beauty which are inherent in the sport” (Trail & James, 2001, quoted in Hamari & Sjöblom, 2017, p. 215). Originally designed to explain what draws traditional sports spectators to disciplines such as figure skating or gymnastics, that reward athletes based on the visual elements and the gracefulness of their performance (Smith, 1988). Affective motivations have been proven to have an impact on the consumption of eSport (Cheung & Huang, 2011) and video game streaming (Hamilton & Al., 2014). On the LoL competitive scene, these pleasant visual elements are both represented outside and inside the game: during the past few years, efforts have been made to improve the scenography of competitions (Webster, 2019; Stubbs, 2019; Reynaud & Duneau, 2020), while the video game itself has known successive graphic reworks since 2014, making it increasingly visually appealing for both players and spectators. As a matter of fact, the video game visuals displayed during eSport competitions are in all respects identical to the one people play. In addition, the wide variety and the diversity of inspirations of additional appearances (or skins) adds up to the game’s artistic quality, thus satisfying the spectators and players appealed by digital aesthetics. Finally, Riot Games has made the visual rework of old champions a priority. An assumption would be that spectators that appreciate the aesthetics of eSport are likely to enjoy the game. Thus, we formulate the next hypothesis:

H4: Aesthetics is positively associated with Perceived Enjoyment

Escapism refers to “the degree to which media enables an escape from day-to-day activities and provides a distraction from an established routine” (Trail and James, 2001, quoted in Hamari & Sjöblom, 2017, p. 216). In a similar way, Yee (2007) identified the willingness to relax and to avoid real-life problems as a motivation to play online games. Similarly to traditional sport consumption and online video game consumption, eSport has the potential to provide excitement and fulfilment to the people that seek refuge in this activity. We argue that LoL eSport spectators that seek Escapism are likely to find the game enjoyable as it serves the same purpose. Thus, we formulate the next hypothesis:

H5: Escapism is positively associated with Perceived Enjoyment

Social Interaction refers to “the gratifications related to socializing with other media consumers” (Hamari & Sjöblom, 2017, p. 217). Socializing with peers has been shown to be of great importance when it comes to consumption of traditional sports (Melnick, 1993) and eSport (Hamilton & Al., 2014). Following McMillan & Chavis (1986), Hamilton & Al. note that many people watch eSport streams to interact with other members of the community, and to satisfy emotional needs. Some eSport fans enjoy the communal aspect of spectating so much that they fill stadiums to witness the live events (Tassi, 2014, quoted in Keiper & Al., 2017), while others gather in dedicated eSport bar chains (Gautier, 2017). In some ways, eSport streams (which include an integrated chat) fit under Oldenburg’s (1997) definition of a “third place”: public places that host regular, voluntary and happily anticipated gatherings of individuals, beyond the realms of work. The same reasoning applies to LoL itself, the in-game chat providing a virtual place of socialization to individuals sharing the same passion. Indeed, Yee (2007) identified socializing, establishing a relationship, and participating in teamwork as three of the motivations for online game play. Based on this literature, we assume that LoL eSport spectators that are driven by a willingness to socialize with peers are likely to find the game enjoyable. Thus, we formulate the next hypothesis:

H6: Social Interaction is positively associated with Perceived Enjoyment

Novelty refers to the enjoyment and excitement of seeing new actors on the sporting scene (Trail & James, 2001). Arguing that the eSport has yet to mature as an entertainment industry, Hamari & Sjöblom (2017) state that there is a constant influx of new talents, the ever-evolving state of the scene making it appealing for novelty-driven spectators. In the context of LoL eSport, if the composition of teams is still unstable (similarly to traditional sports, a Mercato is held twice a year for athletes and coaches), the franchising system and the existence of established fan communities make that some player names or teams are already well known and idolized. However, the frequency at which the game evolves, through the introduction of new content by Riot Games or by the players’ genuine creativity, ensures that each competitive season is different from the previous one. We argue that LoL spectators that appreciate watching new content in eSport competitions are likely to want to try it by themselves, and to find the game enjoyable. Thus, we formulate the next hypothesis:

H7: Novelty is positively associated with Perceived Enjoyment

In the context of online video games, Critical Mass refers to the degree to which people believe that most of their peers are playing. Subjective norms, for the context of our study, refer to the beliefs as to whether other people who are important to them consider that they should or should not play LoL (Chang & Al., 2014). A very basic assumption would be that if the player is surrounded by peers that play LoL, it is most likely that people he considers important have a positive opinion towards the practice of online games. In this case, Critical Mass will have a positive effect on Subjective Norms (Slyke & Al., 2007). Thus, we formulate the next hypothesis:

H8: Critical Mass is positively associated Subjective Norms

The construct of Critical Mass emphasizes that the value of an online game (or another groupware technology, such as a social network) increases with the number of its adopters, and that a certain minimum threshold of users must be reached to ascertain its usefulness (Markus, 1990; Lou, Luo & Strong, 2000). The focus of our study, League of Legends, gathers 100 million monthly users (Kordyaka & Hribersek, 2019), validating this minimum threshold. Its manifest popularity has the potential of giving the message that the game is worth playing (Chang & Al., 2014), shaping their attitude towards using (Guo & Barnes, 2007). Therefore, we hypothesize the following:

H9: Critical Mass is positively associated with Attitude Towards Using

The concept of Subjective norms originates from Fishbein & Ajzen (1975) and was initially dismissed by Davis (1989) when he adapted the TRA towards acceptance of new technologies, resulting in the creation of the widely used Technology Acceptance Model. However, in the past two decades, researchers have judge useful to integrate the concept of peer pressure in their extension of the aforementioned model. Lu, Yao & Yu (2005), while reviewing factors leading to adoption of wireless internet, argued that subjective norms may “help to shape an individual’s estimation of his or her confidence in ability to use a system well”. In the context of our study, we argue that positive peer pressure, notably from close friends who play the game themselves, may influence positively the way an individual perceives his ability to play LoL. Thus, we formulate the next hypothesis:

H10: Subjective norms is positively associated with Perceived Ease of Use

Based on the Theory of Reasoned Action developed by Fishbein & Ajzen (1975), Subjective Norms directly determine behavioural intention. Arguing that the TRA is a very solid model to explain human behaviour, Wu & Liu (2007) developed an adaptation of the



model, and have shown that Subjective Norms is indeed a determinant of intention to play online games. The same conclusion was reached by Guo & Barnes (2007), and Hamari (2015). In this study, following Hsu & Lu (2004), we extend the TAM and propose that individuals that receive positive peer pressure towards the practice of LoL are likely to develop a positive attitude towards playing this game. Thus, we formulate the next hypothesis:

H11: Subjective norms is positively associated with Attitude Towards Using

Perceived Ease of Use, often abbreviated PEOU, refers to “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989, p. 320). In the original TAM, PEOU was positioned as a determinant of perceived usefulness, and of attitude. Following Hsu & Lu (2007), this study replaces perceived usefulness with Perceived Enjoyment, a construct developed by Davis & Al. (1992) and better suited to account for hedonic motivations such as playing video games. Systems that are perceived as easy to use are likely to be perceived as enjoyable (Venkatesh, 2000), they are also less likely to be perceived as threatening by the user (Moon & Kim, 2001). Similarly, researchers have investigated and confirmed the significance of this relationship in the context of intention to play online games (Hsu & Lu, 2007; Lee & Tsai, 2010; Mäntymäki & Salo, 2011). In our study, PEOU refers to the degree at which people find LoL easy to play, meaning how well they understand the game, how easy for them it is to control their character, etc. We argue that players perceiving LoL as an easy to play game are more likely to perceive the game as enjoyable, and to have a positive attitude towards playing it. Thus, we formulate the next two hypotheses:

H12: Perceived Ease of Use is positively associated with Perceived Enjoyment

H13: Perceived Ease of Use is positively associated with Attitude Towards Using

Perceived Enjoyment refers to “the extent to which the activity of using a particular system is perceived to be enjoyable in its own right, apart from any consequences that may be anticipated” (Davis & Al., 1992, p. 1113). If this first definition focuses distinguishes PE from perceived usefulness, a simpler alternative has been proposed by Van der Heijden (2004): PE refers to the consumer’s perception of the fun and pleasure that derives from using a system. As a mean of entertainment, the practice of an online game must certainly bring enjoyment to its users: it is more than likely than a frustrating game will cause the player to stop playing, and to switch to a better alternative, especially considering the absence of switching costs in the context of F2P games. Several academic researchers have emphasized the significance of the relationship between PE and Attitude using the TAM (Hsu & Lu, 2007; Lee & Tsai, 2010; Mäntymäki & Salo, 2011), while Wu & Liu (2007) reached the same conclusions using an

adaptation of the TRA. Finally, Lu & Wang (2008) found that perceived playfulness, a construct similar to PE, was a direct predictor of intention to play online games. Based on the literature, we argue that LoL players perceive the game as enjoyable, and therefore have a positive attitude towards the game. Thus, we formulate the next hypothesis:

H14: Perceived Enjoyment is positively associated with Attitude Towards Using

While the TAM was expected to explain and predict future user behaviour after only a short introduction with the system, therefore designed as a pre-adoption model, many studies based on TAM have extended the model with continuous use intention, making usage of the TAM (intentionally or not) in post-adoption situations (Bhattacharjee, 2001; quoted in Lee & Tsai, 2010). For the purpose of this study, we selected customer loyalty as a post adoption measure. Empirical evidence has shown the statistical significance of the relationship between PE and continuous use intention (Lee & Tsai, 2010; Mäntymäki & Salo, 2011; Hamari, 2015), and between PE and Customer Loyalty (Hsu & Lu, 2007). We argue that LoL players that enjoy playing are more likely to become loyal to the game. Thus, we formulate the next hypothesis:

H15: Perceived Enjoyment is positively associated with Customer Loyalty

In the context of our study, Attitude Towards Using refers to the positive attitude an individual has towards playing the game. However, a positive attitude only means that people have the intention to play the game, it may not translate into actual practice and players may not continue to play the game on the long run (Lu & Wang, 2008). In past researches, Attitude Towards Using has been shown to have significant relationship with continuous intention to use or Customer Loyalty (Hsu & Lu; 2007, Zhao & Fang, 2009; Lee & Tsai, 2010; Mäntymäki & Salo, 2011). Therefore, in this study, we pose Attitude Towards Using as a first determinant to Customer Loyalty, arguing that individuals with a positive attitude towards the game have the potential to become loyal players. Thus, we formulate the next hypothesis:

H16: Attitude Towards Using is positively associated with Customer Loyalty

Flow refers to “the holistic experience that people feel when they act with total involvement” (Csikszentmihalyi, 1990, p.55-56, quoted in Lee & Tsai, 2016, p. 604) and usually consists of four components: control, attention, curiosity and intrinsic interest (quoted in Chang & Al., 2014). Flow is associated with a positive affect, and individuals experiencing Flow want to maintain this optimal experience state. Accordingly, researchers have investigated the impact of Flow on adoption and use of information technologies for the past two decades (Novak & Al., 2000; Koufaris, 2002). Similarly, in the context of online gaming, the Flow

construct has received tremendous attention from researchers, Sweetser & Wyeth (2015) going as far as designing the “GameFlow” model to guide game developers in their conception of video games. Following Choi & Kim (2004) who firstly linked Flow and Customer Loyalty, a plethora of empirical evidence has shown a statistical significance for this relationship (Lee & Tsai, 2010; Huang & Hsieh, 2011; Chang & Al., 2014; Su & Al, 2016). In the context of our study, we argue that individuals that experience Flow while playing LoL are more likely to become loyal players. Thus, we formulate the next hypothesis:

H17: Flow is positively associated with Customer Loyalty

Customer Loyalty refers to the degree to which game players believe that they will continue to play the game (Zhao & Fang, 2009), and is of crucial importance in this study where we investigate the profitability of the F2P business model. In this context, Purchase Intention of Virtual Items are proven to be modelled as a direct consequence of continuous intention to play (Cleghorn & Griffiths, 2015; Mäntymäki & Salo, 2011; Hamari, 2015). Arguing that purchase intention is a rich action which requires both ability and motivation, Balakrishnan & Griffiths (2018) have also shown that Customer Loyalty positively predicts it in their study of mobile in-game purchases. Based on the literature, we argue that loyal LoL players are more likely to engage in purchase of the game’s virtual items. Thus, we formulate this last hypothesis:

H18: Customer Loyalty is positively associated with Purchase Intention of Virtual Items

A summary of the proposed hypotheses for this study is presented below, in Table 1.

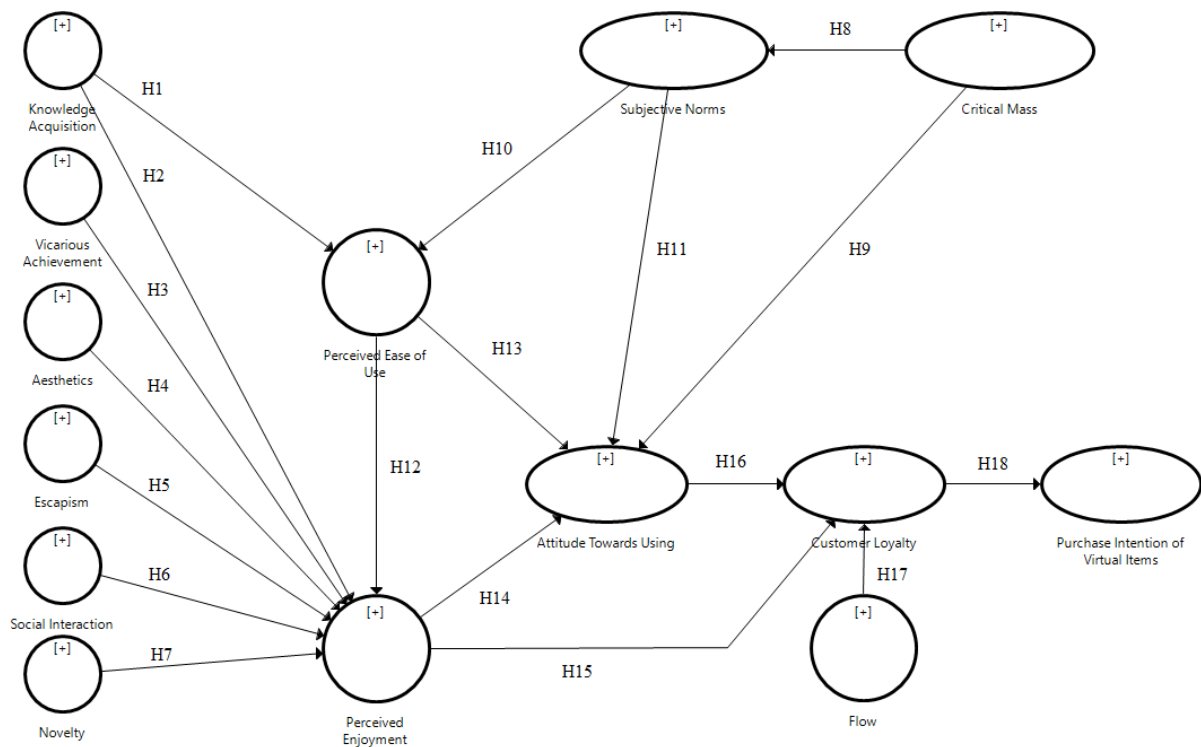
*Table 1 - Summary of hypotheses*

N°	Descriptive	Shortened
H1:	Knowledge Acquisition is positively associated with Perceived Ease of Use	KA → PEOU
H2:	Knowledge Acquisition is positively associated with Perceived Enjoyment	KA → PE
H3:	Vicarious Achievement is positively associated with Perceived Enjoyment	VA → PE
H4:	Aesthetics is positively associated with Perceived Enjoyment	A → PE
H5:	Escapism is positively associated with Perceived Enjoyment	E → PE
H6:	Social Interaction is positively associated with Perceived Enjoyment	SI → PE
H7:	Novelty is positively associated with Perceived Enjoyment	N → PE
H8:	Critical Mass is positively associated Subjective Norms	CM → SN
H9:	Critical Mass is positively associated with Attitude Towards Using	CM → ATT
H10:	Subjective norms is positively associated with Perceived Ease of Use	SN → PEOU
H11:	Subjective norms is positively associated with Attitude Towards Using	SN → ATT
H12:	Perceived Ease of Use is positively associated with Perceived Enjoyment	PEOU → PE
H13:	Perceived Ease of Use is positively associated with Attitude Towards Using	PEOU → ATT
H14:	Perceived Enjoyment is positively associated with Attitude Towards Using	PE → ATT
H15:	Perceived Enjoyment is positively associated with Customer Loyalty	PE → CL
H16:	Attitude Towards Using is positively associated with Customer Loyalty	ATT → CL
H17:	Flow is positively associated with Customer Loyalty	FLOW → CL
H18:	Customer Loyalty is positively associated with Purchase Intention of Virtual Items	CL → PIVI

### 3.2. Preliminary conceptual model

Based on the previous hypotheses, a draft of our research model is presented in Figure 4 below:

*Figure 4 - Proposed structural model*



Finally, before concluding this section, we present in the following Table 2 the main components of this study, as well as their definitions and respective authors.

*Table 2 - Summary of main components*

Construct	Definition	Source
Knowledge Acquisition	The need to acquire knowledge about the team, the players or the strategies through interaction and media consumption	Trail & James (2012), Hamari & Sjöblom (2017)
Vicarious Achievement	The need for social prestige, self-esteem and sense of empowerment that an individual can receive from their association with a successful team	Trail & James (2012), Hamari & Sjöblom (2017)
Aesthetics	The artistic appreciation of the beauty inherent to eSports	Trail & James (2012), Hamari & Sjöblom (2017)
Escapism	The need to find a diversion from work and the normal, unexciting activity of everyday life	Trail & James (2012), Hamari & Sjöblom (2017)
Social Interaction	The need to interact and socialize with others members of the community while watching eSports	Trail & James (2012), Hamari & Sjöblom (2017)
Novelty	The enjoyment of watching new teams, players or games in eSports	Hamari & Sjöblom (2017)
Critical Mass	The idea that some threshold of participants has to be crossed before a social movement explodes into being	Oliver & Al. (1985), Lou, Luo & Strong (2000)
Subjective Norms	An individual's perception that most people who are important to them think they should or should not perform a specific behavior	Ajzen & Fishbein (1980)
Perceived Ease of Use	The degree to which a person believes that using a particular system will be free of effort	Davis (1989)
Perceived Enjoyment	The extent to which the activity of using the technology is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated	Davis & Al. (1992), Heijden (2003)
Attitude Towards Using	An individual's positive or negative feelings about using a particular system	Ajzen (1987), Davis (1989)
Flow	The degree of immersion, focus and enjoyment that a product or service is capable of creating. If someone enters this optimal level of experience, for example while playing, he wants to maintain this state	Csikszentmihalyi (1990), Trevino & Webster (1992)
Customer Loyalty	A customer repeated use of a specific product or service. It contains several dimensions such as continuance intention, willingness to recommend to others, positive word of mouth...	Kotler & Armstrong (1989), Lee & Tsai (2010)
Purchase Intention of Virtual Items	The extent to which an individual is inclined to purchase or recommend virtual items.	Hsiao & Chen (2016), Balakrishnan & Griffiths (2018)

## **Chapter 4 - Methodology**

### **4.1. Research approach**

This chapter describes the methodology used in this study. First, the methods used in collecting data as well as a description of the sample is presented. Then, the methods employed for analysing and testing the aforementioned model and the hypotheses are discussed.

This study aims at uncovering patterns and drawing general conclusions on the relationship between eSport consumption and the F2P business model, by testing the hypotheses drawn from existing literature. Quantitative research employs a deductive approach, it allows the test of pre-existing theories, while reviewing social reality from an objectivist perspective (Gratton & Jones, 2010). A common data collection method associated with quantitative research is questionnaires. The data collected through questionnaires is easily measurable, as it can be converted to numerical figures and analysed through statistics (Bryman & Bell, 2015), and this method allows to gather information from a large sample (Malhotra & Al., 2007). In addition, quantitative questionnaires are cheap to produce and can be distributed online, as the researcher's physical presence is not necessary (Veal, 2018).

### **4.2. Data collection and sample**

#### **4.2.1. Survey development**

The questionnaire was designed, and the data collected in Qualtrics Survey Software. The questionnaire was divided in three sections. The first part consisted in two screening questions, the respondents were asked if they had previous experience with League of Legends and if they had ever watched an eSport LoL match. A negative answer to these two questions resulted in an early termination of the questionnaire: as a result, a clear boundary was established between the target audience and the other respondents.

A second section was dedicated to the demographics and the consumer profiles of the respondents. Participants were notably asked about their gaming habits on LoL, their viewing habits of LoL eSport, and about their purchase habits of virtual items in this specific game.

In the third and last section, respondents were asked to evaluate statements in order to measure the research model variables: knowledge acquisition, vicarious achievement, aesthetics, escapism, social interaction, novelty, critical mass, subjective norms, perceived ease of use, perceived enjoyment, attitude towards using, customer loyalty and purchase intention

of virtual items. For the purpose of our study, some dimensions of the original MSSC were dismissed: following Xiao (2020), the decision was taken to remove “Physical Attractiveness” and “Physical Skills”. The author argues that while “the physique of the athlete and his physical condition are at the centre of traditional sports broadcasts, eSports broadcasts focus on the video game itself, making the appearance of the athletes in full screen quite rare” (Xiao, 2020, p. 101). Similarly, it is uncommon to have a camera focusing on the athlete’s hand movement: if the broadcaster wants to emphasize how well a professional player controls his character, he is more likely to replay in slow-motion a specific performance to the audience.

For similar reasons, it was decided that the dimension “Enjoyment of Aggression” would be removed from our study due to the absence of aggression in the LoL competitive scene. The construct “EA” relates to the audience amusement of observing aggressive behaviour and hostility between athletes (Hamari & Sjöblom, 2017), which is made difficult by the absence of interaction between players in most eSport competitions: in-game, communicating with the enemy team is prohibited. In addition, as this research focuses on the video game League of Legends, we could argue that Riot Games has been enforcing a strict policy against “unacceptable, toxic or unsportsmanlike” behaviour of its athletes: between January 2019 and June 2020, no less than 36 players have been sanctioned, resulting in a fine and/or a suspension from the competitive scene (list of competitive rulings – lol.gamepedia.com, 2020).

Finally, the dimension “Drama” was also removed from our research model, following Hamari & Sjöblom (2017) findings: their results indicate that this dimension of the MSSC is not significantly associated with eSport watching frequency. Drama refers to “the audience appreciation of uncertainty, of dramatic turns of events in sports” (Trail and James, 2001, quoted in Hamari & Sjöblom, 2017, p. 218). In the competitive League of Legends scene, a match between two teams often consists of a “best of three / of five”, with the victory going to the team that has won two / three games over its opponent. In each game, there are many opportunities given to players for them to gain the upper hand over the opponent, and to retrieve it. A possible explanation being that extraordinary plays and dramatic turns of events are quite common and therefore less enjoyable in eSport competitions, when compared with traditional sport encounters.

#### **4.2.2. Data collection**

Distributing the questionnaire online allowed the researcher to reach LoL players and eSport fans on a global scale: it has been argued that this audience spends considerable amount

of time on the web and on community websites, making online surveys an accessible and efficient method of research (Kow & Young, 2013). The link to the questionnaire was distributed online from May 5<sup>th</sup> to June 22<sup>nd</sup>, 2020. Online League of Legends and eSport communities were targeted on social media platforms such as Facebook and Twitter, on video gaming forums such as Reddit and its French equivalent Jeuxvideo.com, and on chatrooms on the Discord VoIP application (see Annex B for an exhaustive list). This is similar to the data collection method employed by Hamari & Sjöblom (2017). A reminder was sent every two weeks to ensure the visibility and accessibility of the questionnaire on these websites and Discord communities that display a high density of information on a daily basis.

Two distinct cover letters were used during the survey distribution (see Annex C). In order to accelerate the collection of answers from respondents, it was decided that participants entering the survey and providing a valid and useable response in the final days of distribution could enter a lottery issuing a total of 50€ in Riot Points, League of Legends' virtual currency. To participate, respondents were asked to provide a valid email address, their LoL in-game alias, and the regional server they play on, so they could be contacted. To prevent "ballot stuffing", it was made so participants could not enter the survey with an already used IP address. As a result, numerous answers were gathered these last few days.

Liao, Tseng & Cheng (2020) were consulted regarding this decision, as they used a similar money incentive, arguing that such practice is "common in local web surveys and should not create significant self-selection bias" (p. 5).

### **4.2.3. Data measurement and scales**

The questions displayed in the questionnaire were developed from existing literature. Resorting to screening questions is very common in videogame-related academic research and is particularly helpful in the context of online quantitative questionnaire to ensure that respondents can answer based on their own experience. For example, Xiao (2020) employed a screening question to eliminate answers from respondents which have never watched eSport.

Regarding the demographic variables, the questionnaire enquired about the respondents' gender (allowing them to refuse to answer the question if they were not comfortable with it). Age was measured and divided in seven groups (under 15, between 16-20, 21-25, 26-30, 31-35, 36-40, and over 40 years old, respectively). Education was measured by asking what the highest degree or level of school was completed, and respondents were divided into six groups (less than a high school diploma, high school degree or equivalent, bachelor's degree, master's



degree, doctorate, and other, respectively). Current occupation was measured and divided into seven categories (employed full time, employed part time, unemployed, student, retired, self-employed, and unable to work, respectively). Lastly, respondents were asked which country they reside in.

The consumer profile and habits of participants was also examined. Gaming experience, purchase habits and eSport experience were measured based on questions and scales found in the literature.

Gaming experiences comprises of two items: League of Legends experience was adapted from Hsiao & Chen (2016) and allowed the division of participants into six categories (under six months, between 6 months and a year, one and three years, three and five years, five and seven years, and over seven years, respectively). Frequency at which participants play LoL was adapted from Laffan & Al. (2016), respondents were asked one of the six categories which would best fit their gaming habits (rarely, occasionally, three to four times a month, one to two times a week, more than two times a week but not every day, and every day, respectively).

Then, purchase habits were measured by asking participants were asked how much in average they spend on LoL each month, using an eight-point scale adapted from Törhönen & Al. (2020): not at all, less than 10euros, between 11 and twenty 20€, 21 to 40€, 41 to 80€, 81 to 100€, 101 to150€, and over 150€, respectively.

Finally, eSport consumption habits were measured and divided into five categories, following Hamari & Sjöblom (2017): never (more rarely than a year), yearly, monthly, weekly, and daily, respectively.

The questions from the last section were based on scales found in the literature and are used to measure each variable of the conceptual model. Table 3 presented below displays the number of items of each scale for each variable, and their respective authors. The items are presented in Annex D, as well as the previous screening, demographics and consumer profile questions.

*Table 3 - Scales authors and number of items*

Variable	Scale's Author	N <sup>a</sup> of items
<b>Knowledge Acquisition</b>	Trail & James (2001)	3
<b>Vicarious Achievement</b>	Xiao (2020) adapted from Trail & James (2001)	3
<b>Aesthetics</b>	Sjöblom, Macey & Hamari (2019) adapted from Trail (2012)	3
<b>Escapism</b>	Xiao (2020) adapted from Trail & James (2001)	3
<b>Social Interaction</b>	Sjöblom, Macey & Hamari (2019) adapted from Trail (2012)	3
<b>Novelty</b>	Sjöblom, Macey & Hamari (2019) adapted from Trail (2012)	3
<b>Critical Mass</b>	Hsu & Lu (2004)	3
<b>Subjective Norms</b>	Hsu & Lu (2004)	3
<b>Perceived Ease of Use</b>	Hsu & Lu (2004)	4
<b>Perceived Enjoyment</b>	Hsu & Lu (2007)	3
<b>Attitude towards using</b>	Lee & Tsai (2010)	3
<b>Flow</b>	Choi & Kim (2004)	6
<b>Customer Loyalty</b>	Hsiao & Chen (2016)	6
<b>Purchase Intention of Virtual Items</b>	Balakrishnan & Griffiths (2018)	5

All the items above were measuring according a 7-point Likert scale ranging from 1 – Strongly disagree to 7 – Strongly Agree. Randomization of items for the adapted MSSC psychometric constructs and other variables was performed to “limit the participants’ ability to detect patterns between the items” (Campbell & Cook, 1979, quoted in Hamari, 2015, p. 303) and reduce the chance of common method bias (Podsakoff & Al., 2003, as quoted in Sjöblom & Al., 2019). A stacked bar – chart presenting the results is displayed in Annex E, while descriptive statistics are displayed in Annex F.

The data collected from the questionnaire was uploaded to IBM SPSS 25 Statistics software, then converted and imported to the SmartPLS 3 software, which is designed to conduct partial least square structural equation modelling (PLS-SEM) and was used to test our research model.

The structural equation modelling method has been commonly employed by academics as it allows researchers to measure complex relationships between multiple variables. SEM is considered as a confirmatory procedure, as the relationships presented in the proposed model must be drawn from strong theoretical foundations.

A common approach of SEM is Partial Least Square (or component-based), as PLS can handle a wide variety of data from metric to non-metric, including the Likert type data (Hair & Al., 2010). According to Henseler & Al. (2009), PLS-SEM enables a causal-predictive analysis of the relationships between constructs in complex models. This method has been widely used in strategic management (Hair & Al., 2012a), marketing and tourism (Hair & Al., 2012b),

making it ideal for the purpose of our study. It is also well suited if the sample size is small (Geffen & Al., 2000): a rule of thumb for sample size it that it must be at least ten times the maximum number of inner or outer model links pointing at the most complex latent variable of the model (Hair & Al., 2013). PLS-SEM is a non-parametric method and therefore does not require data to meet distributional assumptions such as normal distribution (Geffen & Al., 2000): this makes parametric significance tests unfit to assess the reliability and significance of the model's path coefficients or loadings. Thus, PLS-SEM operates with a non-parametric technique named bootstrapping to test the statistical significance of PLS results such as the Cronbach's Alpha (used to assess internal consistency reliability) or the coefficient of determination – explained variance  $R^2$  (Hair & Al., 2017).

#### **4.2.4. Preliminary test**

Before launching the questionnaire online, a pilot or preliminary test was conducted. The objective was to assess if the questionnaire needed any revision. A pre-test was thus carried in April 2020, resulting in the collection of 30 valid answers over a one-week period.

By reviewing the results, adjustments were made to the model, and to the survey. First, some items outer loadings were considered too low: three items for customer loyalty (CL1, CL2 and CL3 scoring 0.690, 0.497 and 0.639 respectively) were deleted from the construct scale since their removal led to an increase of the composite reliability and average variance extracted (Hair & Al, 2010). In addition, the item PEOU3 suffered from a very low loading (0.362) and was removed, as items with loading below 0.40 should always be eliminated from the construct' scale (Bagozzi, Yi & Phillips, 1991; Hair & Al., 2011). Subsequently, a third item was added to constructs subjective norms and critical mass (items SN3 and CM3 respectively), while a fourth item was added to the construct perceived ease of use (PEOU4). This was done in order to improve the Cronbach's Alpha and Composite Reliability of these constructs, which failed to match the 0.70 criteria (Hair & Al., 2010). The results indicated that the scales used to measure other constructs had good levels of internal consistency, with values over 0.70.

More importantly, it was decided that the construct Flow would be removed from the research model, as four out of six items (FLOW3Reversed, FLOW4, FLOW5 and FLOW6) presented loadings below the 0.40 recommended threshold, a low Cronbach's Alpha (suggesting a lack of internal consistency), and a low AVE (a lack of variance captured by the construct, suggesting lack of convergent validity). Modifying the scale was considered, as a Cronbach's Alpha below 0.70 suggests that items forming the scale may not be measuring the same underlying construct. However, the alternative 3-item scale used by Hsu & Lu (2004) or

Chang & Al. (2014) to measure flow necessitated that the concept would first be introduced via a dedicated instruction during the questionnaire. This alternative was therefore dropped, as displaying information went against the initial willingness of preventing respondents from discerning patterns. Other scales, such as the 4-item scale used in Lee & Tsai (2010) or the 13-item scale used by Huang & Hsieh (2011) were deemed too similar from the one used in the pre-test.

Finally, the wording of some questions was refined thanks to the respondent's feedbacks.

#### **4.2.5. Descriptive statistics of the sample**

This study aims at unveiling the links between eSport consumption and F2P profitability, by focusing on a specific title "League of Legends". Accordingly, and as mentioned above, LoL players and eSport enthusiasts were contacted through various social networks and websites, so that the researcher could gather a convenience sample to empirically validate the research model.

Over the course of two months, 633 responses were recorded. Out of this sum, a total of 271 answers were dismissed: 222 responses were uncomplete, 34 failed to pass the two screening questions, and another 15 answers were eliminated as the duration to complete the survey was considered too low (below 5minutes for an average answering time of 7minutes). Thus, the effective response rate is quite low (57,2%) with a total of 362 valid answers.

Among these valid answers, the vast majority of respondents were men (85.6%), an unequal gender distribution which is consistent with past researches on video games. For example, Yoo (2015), Hsiao & Chen (2016) and Hamari & Al. (2017) all report that male respondents represented 72%, 89% and 91% of their sample, respectively.

Participants ranging from 16 to 25 years old represent nearly 80% of the sample, which can be easily explained both by the nature of the targeted audience, and by the exclusive distribution of the questionnaire on social networks, bulletin-board websites and streamers' community platforms. In their pioneer article regarding eSport, Hamari & Sjöblom (2017) obtained similar results, as 68% of their sample ranged in the same 16 to 25 age group. Therefore, it is not surprising to observe that 60.5% of the respondents are students.

To conclude this section on the demographics of the sample, we could argue that the over-representation of French respondents in this sample has to be explained by the questionnaire dissemination on French streamer's Discord communities, and by the player-to-

player broadcast and recommendation of the survey that occurred within the last days of distribution. As there was a need to gather nationalities in specific groups, answers were reviewed and some saw their wording corrected: respondents answering “UK”, “united kingdom” and “England” are now regrouped in the “United Kingdom” group. Other demographic information about the respondents is presented in Table 4.

*Table 4 - Demographic information*

N = 362	Demographic variable	%
Gender		
	Male	85.6
	Female	12.7
	Other	0.3
	Prefer not to say	1.4
Age		
	< 15	3.3
	16 - 20	37.6
	21 - 25	42.3
	26 - 30	13.3
	31 - 35	3
	36 - 40	0
	> 40 years old	0.5
Education		
	Less than high school diploma	10.2
	High school degree or equivalent	33.4
	Bachelor's degree	34.3
	Master's degree	17.1
	Doctorate	0.8
	Other	4.1
Occupation		
	Employed (full time)	25.1
	Employed (part-time)	3
	Unemployed	6.6
	Student	60.5
	Retired	0.3
	Self-employed	2.5
	Unable to work	2
Living place		
	France	57.7
	United States of America	4.4
	Belgium	4.4
	Germany	4.1
	United Kingdom	3.6
	Ireland	3.3
	Rest of the world	22.5
<i>(every subsequent country &lt;2%)</i>		

In addition to demographics, the respondents' consumer profile was also assessed. Findings indicate that the convenience sample is mainly of players that have a close relationship with the game: nearly 80% of the sample admits playing the game more than two times a week, and most respondents (53.9%) are "senior players", who have been play been playing LoL for over 5. In comparison, Hsiao & Chen (2016), using the same scale, indicate that only 6.7% of their sample have been playing mobile games for more than 5 years.

Concerning our respondents' purchase of virtual items, findings are not necessarily in line with the literature: if the F2P model described in Alha & Al. (2014) is respected, with a majority of non-paying users and low spenders outweighing a minority of high spenders, we can also observe a high conversion rate, as 73.5% of the respondents engage in virtual items purchase each month.

This is far beyond the 20 to 30 percent conversion rates from non-paying to paying players described in Hamari, Alha & Al. (2017). However, it is surprising to observe that a non-negligible portion of respondents (7.5%) declared spending more than 150 euros each month on this specific video game: the gap with previous high spending categories might indicate that some respondents did not understand this specific question.

Finally, the questionnaire participants reported high frequency of LoL eSport consumption: 55% of them watch LoL competitive matches at least once a week. This is however significantly below the average frequency measured by Hamari & Sjöblom (2017) (almost 80% of eSport consumers declared watching eSport at least once a week).

A justification for this gap could be that Hamari & Sjöblom questionnaire was mostly distributed on eSport-related subreddits, thus reaching enthusiastic fans. Furthermore, as their study was not limited to a specific game, the respondents were able to include in their eSport consumption a much wider variety of broadcasts.

It could also be argued that the inclusion of screening question resulted in the exclusion of a massive share of LoL fanbase: according to Newzoo, 26% of LoL fans are viewers only, 32% are players only, while our research focuses on the remaining 42% (Statista, 2019). Other information on the consumer profile of respondents is presented on Table 5.

*Table 5 - Consumer profile information*

N = 362	Consumer profile variables	%
League of Legends experience (years)		
	Under 6 months	4.7
	6 months to 1 year	9.7
	1 to 3 years	12.4
	3 to 5 years	19.3
	5 to 7 years	29.6
	Over 7 years	24.3
Average frequency of play on LoL		
	Rarely	2.2
	Occasionally	7.7
	Three to four times a month	0.9
	One to two times a week	10.2
	More than two times a week but not e	46.4
	Every day	32.6
Average amount spent per month on LoL virtual items		
	Not at all	26.5
	Less than 10 euros	36.7
	11 - 20 euros	13.5
	21 - 40 euros	9.4
	41 - 80 euros	3.6
	81 - 100 euros	1.1
	101 - 150 euros	1.7
	Over 150 euros	7.5
Average frequency of LoL eSport consumption		
	Never (more rarely than a yearly)	1.9
	Yearly (once a year)	17.7
	Monthly (once a month)	25.4
	Weekly (one a week)	37.3
	Daily	17.7

## Chapter 5 - Research Findings, and Discussion

Testing the model requires two distinct phases: first, the outer model (measurement model) needs to be assessed, and if considered valid, a second phase begins allowing us to test the hypotheses and draw conclusions, using the inner model (structural model) parameter estimates. In this research, a bootstrap was used, by replacing the original sample with 5000 re-samples.

### 5.1. Measurement model

Thus, the measurement model needs to be assessed first. This research focuses on three aspects to determine its validity and quality: the internal consistency reliability, the convergent reliability, and finally the discriminant validity. The examination differs between reflective and formative constructs; however, our model comprises only reflective constructs (Hair & Al, 2019). A synthesis of the measurement model metrics for reflective models, their respective guidelines and authors is presented on Table 6.

*Table 6 - Measurement model metrics for PLS-SEM*

Measurement Model Metrics			
Assessment	Criteria	Guideline	Reference
Internal Consistency Reliability	Item Loadings	> 0.70	Hair & Al. (2011)
		> 0.50	Hair & Al. (2010)
	Cronbach's Alpha	> 0.70	Hair & Al. (2010)
	Inner and Outer Variance Inflation Factor (VIF)	< 5	Kock & Lynn (2012)
Convergent Validity	Composite Reliability	> 0.70	Hair & Al. (2010)
	Average Variance Extracted (AVE)	> 0.50	Hair & Al. (2010) Urbach & Ahlemann (2010)
	Heterotrait-Monotrait (HTMT)	< 0.90	Hair & Al. (2017) Henseler & Al. (2015)

The outer loadings are all above the 0.70 criterion, with the exception of two indicators for the perceived ease of use construct (PEOU1 and PEOU2 scored 0.605 and 0.634, respectively), as reported in Annex G. However, these two indicators were not removed, since they are above 0.40 and that their removal was detrimental to the composite reliability and average variance extracted of the construct (Bagozzi, Yi & Phillips, 1991; Hair & Al., 2010).

Overall, the inner model yielded good reliability and validity results: concerning the internal reliability, two out of the thirteen constructs failed to meet a Cronbach's alpha level of 0.70, as recommended by recommended by Hair & Al. (2010). The constructs perceived ease



of use and escapism indeed show respectively a Cronbach's Alpha of 0.605 and 0.695. However, the decision was taken to retain these two constructs in the research model, as their composite reliability and average variance extracted levels satisfy the required criteria of 0.70 and 0.50. Hair & Al. (2019) argue that, in comparison with composite reliability, Cronbach's alpha is a less precise measure of reliability since the items are unweighted.

As presented in Annex G, the other constructs' composite reliability is well above the recommended levels of 0.70 (Hair & Al., 2010). Also, the average variance extracted of the remaining eleven constructs range between 0.671 and 0.757, reaching the 0.50 recommended level (Hair & Al., 2010; Urbach & Ahlemann, 2010), which suggests that every component has convergent validity. An AVE of 0.50 or above indicates that the construct explains half or more of the variance of the items that make up the construct.

In order to establish the discriminant validity of our research model, several metrics can be used:

- First, according to the Fornell-Larcker criterion, "the square root of the AVE of each construct has to be larger than its correlation to any other construct" (Chin, 1988; Fornell & Larcker, 1981, quoted in Hamari, 2015, p. 303). In this research, the Fornell-Larcker criterion is met for each construct (Annex H), suggesting that the model's discriminant validity is established.

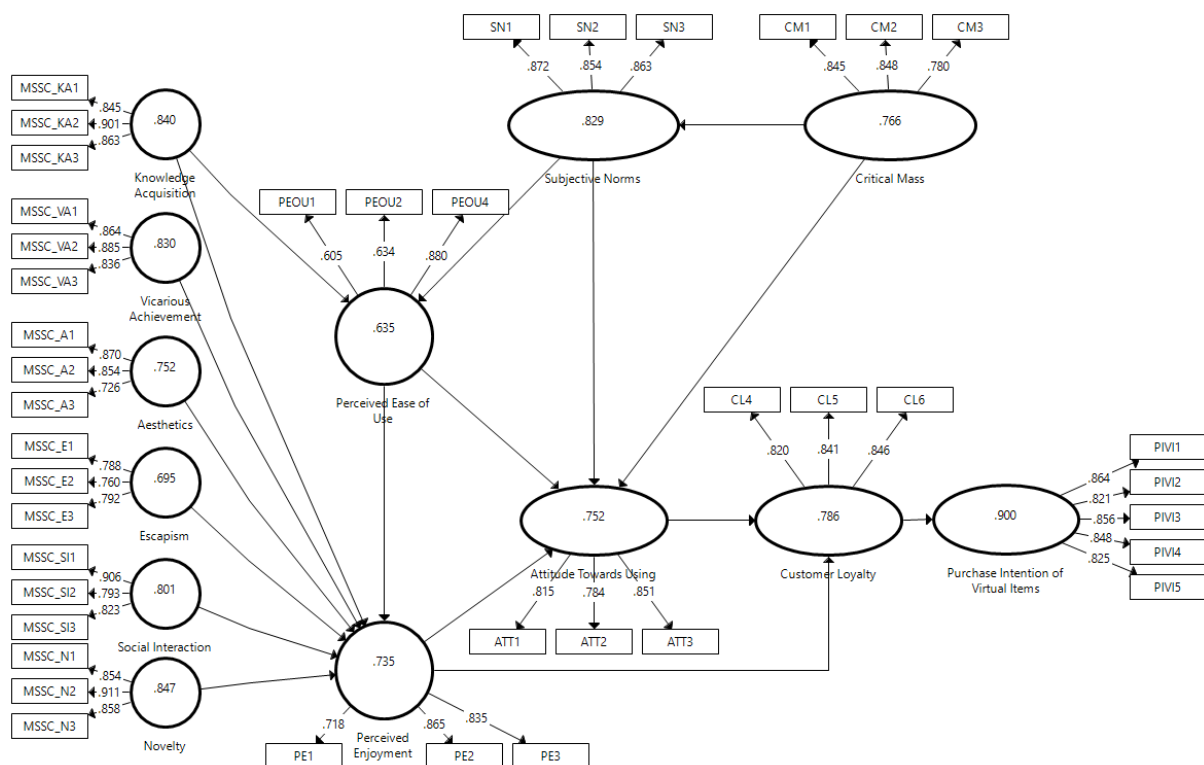
- Secondly, discriminant validity can be assessed using the Heterotrait-Monotrait (HTMT) ratio criterion, which should not surpass the recommended level of 0.90 (Henseler & Al., 2015). In this research, the HTMT criterion is met for each ratio, except for the one between the reflective constructs perceived enjoyment and attitude towards using which is measured at 0.916. However, Henseler & Al. (2015), quoting the technology acceptance model developed by Davis (1989) and its adaptations (Venkatesh & Davis, 2000; Venkatesh & Al., 2003), argue that some constructs, despite being conceptually different, might be "difficult to distinguish empirically in all research settings". In addition, if the 0.90 threshold is the most commonly used, some authors consider that discriminant validity of the model is respected as long as the HTMT ratio is less than 1.00 (Gaskin, Godfrey & Vance, 2018). A table presenting HTMT ratios for the complete data is presented in Annex I.

- Thirdly, item's cross loadings can be analysed: according to Chin (1998), each indicator should load highest on the construct it is intended to measure, compared to other constructs. Cross loadings yielded good results in the context of our research, as reported in Annex J.

To conclude this section on the assessment of the measurement model, this research uses outer variance inflation factors (VIFs) to identify the level of multicollinearity in the indicators. A high VIF value implies that the information of the constructs is redundant (Hair, Ringle & Sarstedt, 2011). Amongst the two criteria presented in Table 4, Kock & Lynn (2012) recommendation is the most conservative: VIF values are acceptable if below 5. In this research model, the VIF values range between 1.072 (PEOU4) and 2.935 (PIVI4), as reported in Annex K, meaning that the collinearity among the independent variables is low.

With the outer model (measurement model) being assessed and considered a good fit, conclusions can be drawn base on the model presented below, in Figure 5, which presents the structural model, item loadings and Cronbach's Alpha for all constructs.

Figure 5 - SmartPLS research model - reports of item loadings and Cronbach's  $\alpha$



## 5.2. Structural model

When the outer model (measurement model) assessment is considered satisfactory, the next step for researchers consists in assessing the inner model (structural model) (Hair & Al., 2019). A synthesis of the structural model metrics, their respective guidelines and authors, is presented on Table 7.

*Table 7 - Structural model metrics for PLS-SEM*

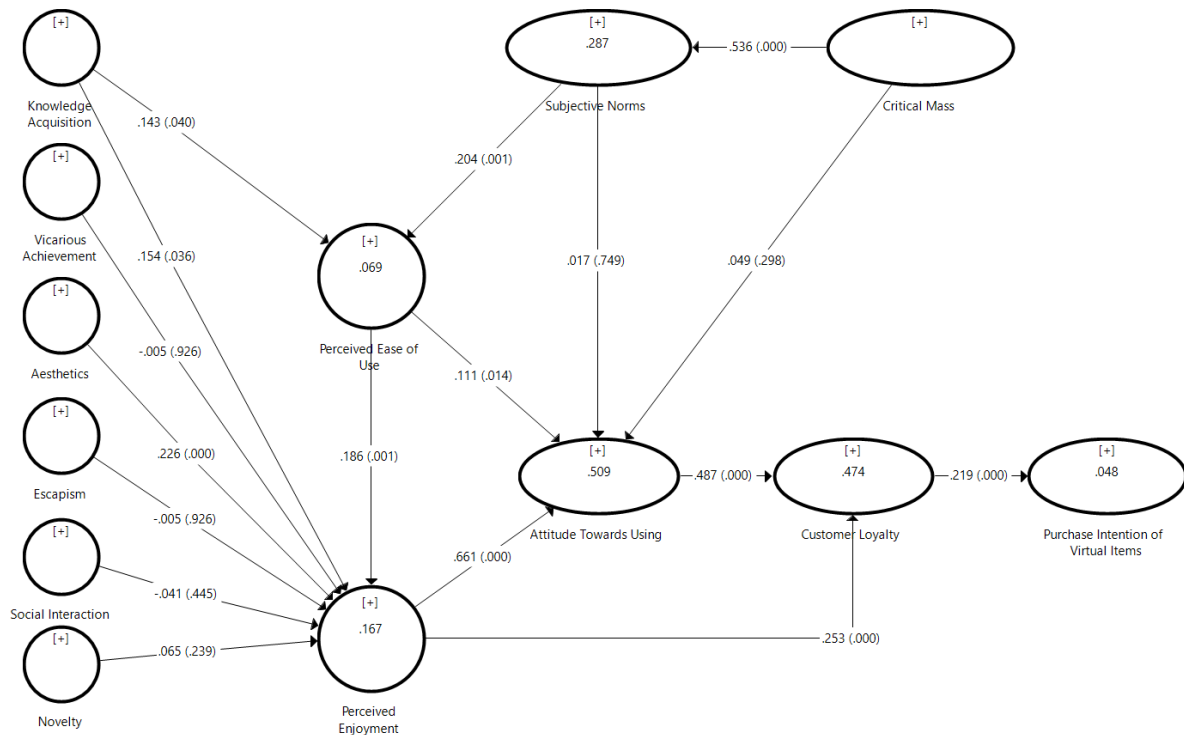
Structural Model Metrics		
Criteria	Guideline	Reference
Goodness-of-fit (SRMR)	< 0.08 (saturated model)	Henseler & Al. (2015)
	< 0.08 (estimated model)	
Coefficient of Determination (R <sup>2</sup> )	0.67 - Substantial	Chin (1998)
	0.33 - Moderate	Henseler & Al. (2009)
	0.19 - Weak	
Predictive Relevance Stone-Geisser's Q <sup>2</sup>	> 0.5 - Large	Hair & Al. (2019)
	> 0.25 - Medium	
	> 0 - Small	
Path Coefficient	sig. p < 0.001 (most conservative)	Hair & Al. (2010)
	sig. p < 0.01 (less demanding)	
	sig. p < 0.05 (most widely used)	
Effect Size (f <sup>2</sup> )	0.35 - Large	Cohen (2013)
	0.15 - Medium	
	0.02 - Small	

In SEM, there is a need to assess how well the model fits with observed data (Hair & Al., 2010). An analysis of the goodness-of-fit can be established using the standardized root mean squared residual (or SRMR) introduced in Hu & Bentler (1999).

SRMR recommendations for goodness-of-fit assessment differ according to authors, as Hu & Bentler recommend a value below 0.08, while Ringle (2016) considers a threshold of 0.10. SmartPLS 3 displays an estimated model' SRMR of 0.086, quite close to the most conservative recommendation, which suggests that the model fits the data well (Henseler & Al., 2015).

Now that the measurement model and the goodness-of-fit are validated, conclusions about the structural model can be taken. While the criteria used to extract conclusion and test hypotheses are presented in Table 7, the evaluations of the structural model are presented in both Figure 6 and Table 8.

Figure 6 - SmartPLS research model – reports of bootstrapping results



Note: The values within constructs indicate their respective R<sup>2</sup>. The values on connections correspond to path coefficients (β) of relationships with p-values in parentheses.

Table 8 - Structural model results

Hypothesized relationship	Proposed effect	Path coefficient β	f <sup>2</sup>	Effect size	Results
KA → PEOU	Positive	0.143*	0.022	Small	H1: Supported
KA → PE	Positive	0.154*	0.025	Small	H2: Supported
VA → PE	Positive	-0.005			H3: Not supported
A → PE	Positive	0.226***	0.046	Small	H4: Supported
E → PE	Positive	-0.005			H5: Not supported
SI → PE	Positive	-0.041			H6: Not supported
N → PE	Positive	0.065			H7: Not supported
CM → SN	Positive	0.536***	0.403	Large	H8: Supported
CM → ATT	Positive	0.049			H9: Not supported
SN → PEOU	Positive	0.204**	0.044	Small	H10: Supported
SN → ATT	Positive	0.017			H11: Not supported
PEOU → PE	Positive	0.186**	0.038	Small	H12: Supported
PEOU → ATT	Positive	0.111*	0.023	Small	H13: Supported
PE → ATT	Positive	0.661***	0.796	Large	H14: Supported
PE → CL	Positive	0.253***	0.062	Small	H15: Supported
ATT → CL	Positive	0.487***	0.228	Moderate	H16: Supported
FLOW → CL	Positive				H17: Not measured
CL → PIVI	Positive	0.219***	0.050	Small	H18: Supported

Variance explained: SN (R<sup>2</sup>=0.287), PEOU (R<sup>2</sup>=0.069), PE (R<sup>2</sup>=0.167), ATT (R<sup>2</sup>=0.509), CL (R<sup>2</sup>=0.474), PIVI (R<sup>2</sup>=0.048)

Predictive validity: SN: (Q<sup>2</sup>=0.206), PEOU (Q<sup>2</sup>=0.031), PE (Q<sup>2</sup>=0.096), ATT (Q<sup>2</sup>=0.327), CL (Q<sup>2</sup>=0.317), PIVI (Q<sup>2</sup>=0.030)

Note: \*\*\* indicates p < 0.001, \*\* = p < 0.01, \* = p < 0.05

Note: Effect sizes (f<sup>2</sup>) below the 0.002 threshold are not reported, as they indicate non-existent effects

To begin with, an observation of  $R^2$  levels allows us to report that the research model predicts moderate levels of variance for customer loyalty and attitude towards using ( $R^2$  values of 0.474 and 0.509 respectively), and a weak level of variance for subjective norms (0.287) (Chin, 1998, quoted in Henseler & Al., 2009). According to Hair & Al. (2011), this is suggestive of an average to substantial explanation effect for these constructs. However, applying the same reasonings to the low levels of variance explained reported on PEOU, PE and PIVI ( $R^2$  values of 0.069, 0.167 and 0.048) could indicate that the model is unfit to explain what influences these constructs in a significant way.

Although some variance levels may seem worrying, all of the dependent variables' Stone-Geisser's  $Q^2$  are above zero, which confirms that our model has predictive validity (Stone, 1974, Geisser, 1974, quoted in Hair & Al, 2019). Similarly to variance explained, the two dependent variables that yield the highest levels of predictive validity are customer loyalty and attitude towards using, with respective  $Q^2$  values of 0.317 and 0.327. These results were obtained using the SmartPLS 3 blindfolding procedure.

Thus, path coefficients must be carefully investigated. The proposed paths between adapted dimensions of the motivational scale for sport consumption (Hamari & Sjöblom, 2017), and determinants of acceptance PEOU and PE (Hsu & Lu, 2004) are all reported to be statistically insignificant, with p-values above the less conservative 0.05 threshold. However, there is three notable exceptions:

- The path between KA and PEOU is statistically significant ( $\beta = 0.143$ ), as well as the one between KA and PE ( $\beta = 0.154$ ). These two paths are significant, with p-values below 0.05 ( $p = 0.041$  and  $0.033$ , respectively).
- The most significant path comes between aesthetics and perceived enjoyment: ( $\beta = 0.226$ ). This path is significant, with a p-value below 0.001 ( $p = 0.000$ ).

Overall, the analysis shows that only three out of the seven hypotheses between eSport consumption dimensions and TAM determinants are supported: H1, H2 and H4.

Following our review of path coefficients, there was no evidence of statistical significance for paths between SN and ATT, nor between CM and ATT (their reported p-values are respectively 0.294 and 0.744, well above the 0.05 threshold). Hypotheses H9 and H11 are therefore not supported.

Although, a strong relationship is established between CM and SN ( $\beta = 0.536$ ,  $p = 0.000$ ), as well as a smaller one between SN and PEOU ( $\beta = 0.204$ ,  $p = 0.001$ ). Furthermore, an indirect

effect of CM on PEOU via SN is reported on SmartPLS 3 ( $\beta = 0.109$ ,  $p = 0.002$ ). Thus, hypotheses H8 and H10 are supported by empirical evidence.

The Technology Acceptance Model, as presented in the literature review, has received considerable attention from researchers, and has been widely used to explain video games adoption behaviour. It is therefore not surprising to observe that the paths that comprises our adaptation of the model are all significant, with the paths between PE and ATT ( $\beta = 0.661$ ), PE and CL ( $\beta = 0.253$ ) and ATT towards CL ( $\beta = 0.487$ ) all being significant with p-values under the 0.001 threshold. The paths coefficients between PEOU and PE ( $\beta = 0.186$ ,  $p = 0.001$ ), and between PEOU and ATT ( $\beta = 0.111$ ,  $p = 0.014$ ) also indicate a statistical significance, however with less conservative p-values (respectively 0.01 and 0.05 thresholds). As a result, hypotheses H12, H13, H14, H15 and H16 are supported.

Finally, following our literature review, the assumption was made that customer loyalty would predict purchase intention of virtual item. Indeed, the path between CL and PIVI is statistically significant ( $\beta = 0.219$ ,  $p = 0.000$ ), which makes our last hypothesis H18 supported by empirical evidence. As a reminder, H17 was discarded following the elimination of Flow from our research model.

An examination of effect sizes ( $f^2$ ) of relationships is recommended in PLS-SEM, as it allows to understand the magnitude of influence of independent variable on a said dependent variable. Effect sizes can be seen as a confirmation of path coefficients estimates, as their rank order is often redundant with the size of  $\beta$  observed (Hair & Al., 2019). This is indeed the case in our research, with effect sizes ranging from small (KA  $\rightarrow$  PEOU, KA  $\rightarrow$  PE, A  $\rightarrow$  PE, SN  $\rightarrow$  PEOU, PEOU  $\rightarrow$  PE, PEOU  $\rightarrow$  ATT, PE  $\rightarrow$  CL and CL  $\rightarrow$  PIVI), moderate (ATT  $\rightarrow$  PIVI), and large (CM  $\rightarrow$  SN and PE  $\rightarrow$  ATT) following the reported sizes of path coefficients.

### 5.3. Discussion

Based on all the previous information, very valuable discussions can be extracted.

Firstly, amongst the six dimensions of the Motivational Scale for Sport Consumption we adapted to measure motivations for LoL eSport consumption and assume would have an impact on players' motivation to play the game, only two yielded positive results. These results do not indicate that Vicarious Achievement, Escapism, Social Interaction or Novelty are not motivators of eSport consumption for LoL players, but rather that they do not improve significantly their willingness to play the game. However, as hypothesized, results suggest that when LoL players follow the eSport competitive scene with the objective of gaining knowledge about the game, their perception of the game enjoyability and simplicity of use is strengthened. This is consistent with prior studies where Knowledge Acquisition was proven to have a positive relationship with the perceived usefulness and Perceived Ease of Use, and those which postulated a positive relationship with intention to use a technology (Al-Emran & Al., 2018; Al-Emran & Teo, 2019). Similarly, LoL players who appreciate the Aesthetics of eSport broadcasts report higher enjoyment levels when playing the game. This is not a surprise: as people play games for hedonic reasons, the aesthetical quality, the pleasing visuals and high-end graphics of a game can simply determine why a video game, or a video console would be preferred over another. In 2011, a survey by Information Solutions Group indeed found that improved graphic designs increased the number of users for mobile games. In the current video game industry, it has become increasingly common for developers to publish "remakes" "remastered" versions of existing games, whose added value in relation with the originals often resides in the sole improved graphic visuals (Brightman, 2017).

The lack of support for hypotheses linking other dimensions of the MSSC with the TAM model is interesting in itself. While we assumed that LoL eSport fans, the ones who thrive and vibrate when their favourite team competes on-screen, would be likely to enjoy the game, results show an absence of correlation between Vicarious Achievement and Perceived Enjoyment. One could argue that this result originates from a limitation of our study, as we focused on online spectators of LoL eSport. An examination of Sjöblom & Al. (2019) study, which compares live event and online attendants of eSport matches, allows us to rebut this idea: live attendees do not report higher vicarious achievement levels than their online counterparts. Thus, the invalidation of H3 might simply indicate that, for most eSport fans, the enthusiasm that derives from seeing their win is not transferrable to the game itself. Similarly, Cheung & Huang (2011) explain that some StarCraft spectators (that fit under "The Entertained" persona)

find more satisfaction in watching than playing, as spectating “affords the experience of playing, without the stress”.

This idea of stress preventing individuals from appreciating the game could also be an explanation for the absence of relationship between Escapism and Perceived Enjoyment. In LoL, two teams of strangers need to fulfil complex tasks in order to surpass their opponents (Kou & Gui, 2014). The stakes of winning a Ranked game are high, as players can be demoted on a lower division after too many defeats. Moreover, precise appreciation of players’ individual performance is displayed during and after the game (count of kills, deaths, assists, gold acquired, damage given and taken, etc.). This assessment, originally designed to allow oneself to improve, is commonly used to mock the bad performance of opponents, or blame teammates for their mistakes. Therefore, we argue that the game’s high-competitiveness and focus on performance might not allow players to escape from their day-to-day routine and from the pressure of their workplace.

Toxicity, a term used by Riot Games to denote problematic player behaviour (Kou & Gui, 2014), is a recurrent issue in the online gaming community: the Californian-based publisher, as investigated by Kou & Nardi (2014) has always considered anti-social behaviour as a threat to the development of its online community, and has enforced regulations and sanctions both for amateur (McWerthor, 2012; Kou & Nardi, 2014) and professional players (Competitive ruling – lolgamepedia, 2020). However, this toxicity problem is not limited to the game we are studying, as indicated by Blizzard’s disciplinary sanctions against some Overwatch eSport players homophobic and racist outbursts (Castello, 2017). The toxicity of LoL’s in-game chat may provide an explanation to the non-significance of the relationship between Social Interaction and Perceived Enjoyment: while LoL eSport spectators appreciate the sense of communion the competition broadcasts provides, playing the game does not allow them to reach adequate levels of satisfaction when they interact with other players. This is particularly regretful, knowing that social interaction has been proven a strong determinant for online games’ motivation to play (Yee, 2007; Lee & Tsai, 2010) and customer loyalty (Choi & Kim, 2004; Su & Al, 2016).

Finally, no statistical significance was found on the relationship between Novelty and Perceived Enjoyment of LoL, suggesting that watching new players compete or newly introduced content in the game is not sufficient to increase player’s Perceived Enjoyment of LoL. A possible explanation would be that LoL players are less sensible to the introduction of new eSport players (known as ‘rookies’) than to the performance of famous players, such as



triple world champion Lee “Faker” Sang-Hyeok. A second explanation would be that, as LoL eSport competitions take place on a previous patch/update than the one available on the live servers (to “ensure a consistent strategic playing field for the duration of the competitions”, Riot Games, 2020), LoL players are already accustomed to novelties when they hit the competitive scene. Indeed, when a new character is introduced, players have the opportunity of playing or facing it in their own matches, and to get familiar with what this novelty brings to the game. As a consequence of this delay, it could be argued that players are unlikely to be enthusiastic towards “newly introduced content” when watching eSport. Further research on the Novelty motivation to watch eSport may focus on timely events such as the introduction of a new player into an existing team “roster” (or on the semi-annual transfer season) and investigate whether such changes have an impact on the gaming intentions of eSport enthusiasts or not.

With these considerations about the links between eSport consumption motivations and motivations to play LoL in mind, we can now discuss the second research question, and focus on the determinants of Customer Loyalty.

The adaptation and extension of the TAM model yielded satisfactory results, the overall explanatory power of our model having a  $R^2$  of 50% for the player’s Attitude Towards Using, and 47% for player’s Customer Loyalty. Consistently with previous researches on online games’ acceptance using the same theoretical background, Perceived Ease of Use predicts Perceived Enjoyment, and that both constructs are predictors of Attitude Towards Using, with Perceived Enjoyment having the strongest relationship between the two (Hsu & Lu, 2007; Lee & Tsai, 2010; Mäntymäki & Salo, 2011). This last relation between PE and Attitude yields the largest path coefficient and effect size of our study ( $\beta = 0.661$ ,  $f^2=0.796$ ), highlighting the importance of player enjoyment in adoption of video games. Interestingly, we note that Mäntymäki & Salo (2011) employed both PE and PU in their study, with PE being a stronger predictor of both Attitude and continuous use intention compared with its utilitarian counterpart, which validates our decision to adopt PE instead of PU.

However, the hypotheses linking directly Subjective Norms and Critical Mass with a positive Attitude towards playing LoL are not supported by empirical evidence. These findings contradict Guo & Barnes (2007) assumptions on the impact of social influence on behavioural intention to play online virtual worlds. In Hsu & Lu (2004), Critical Mass was found to predict Attitude, while their initial hypothesis linking Subjective Norms and Attitude was rejected. It is worth noting that items SN1 and SN2 (respectively most of my colleagues and most of my

classmates think that I should play League of Legends) report means below 4 (respectively  $\mu = 3.78$  and  $\mu = 3.75$ , see Annex F), indicating that, with the exception of close friends, important peers generally have a negative opinion of respondents practice of LoL. This is confirmed by the low mean reported on CM3 (3.22), item that assessed if most of the respondents' classmates/office collaborators also play LoL. Andrew Fishman (2019, p. 1.), in an article about Video Games Health, resumes the situation quite well: "to well-meaning parents, video games often look like a waste of time; a waste of childhood", before highlighting that playing video games can be a positive experience allowing children to build social skills and confidence. Indeed, Peña & Hancock (2006) analysed nearly six thousand text messages produced by online game participants, with results indicating that players produced "almost three times as many positive socioemotional messages as they did negative socioemotional messages" (p. 103). Similarly, Kowert, Domahidi & Quandt (2014) explain that online games may offer to shy individuals the potential to overcome their social difficulties, to build and maintain friendships over shared gaming sessions.

Thus, a possible explanation for the rejection of H9 and H10 may be that individuals practicing an online video game may themselves bear a negative opinion of this hobby, integrating the views and considerations of their peers. While "video games have developed a reputation for being anti-social spaces" (Kowert & Kale, 2018, p.185), the reality seems more complex, as evidenced by Kowert & Kale (2018). On the base of a literature review, the authors presented and refuted one by one the most common stereotypes on the socially isolating nature of video games (people who play online games are lonely, online friendships are less valuable than offline ones, etc.). However, this debate is still ongoing, and free-to-play video games, which by nature do not exclude any potential player, may represent a privileged case study for future researches on this matter.

Consistently with Chang & Al. (2014) findings, Critical Mass positively influence Subjective Norms, our resulting reporting a large path coefficient and effect size for this relationship ( $\beta = 0.536$ ,  $f^2 = 0.403$ ). An indirect effect also exists between CM and PEOU, through the intermediary of SN, as reported in the previous section. Subsequently, the relationship between SN and PEOU is statistically significant. This suggests that social influences are predictors of PEOU, meaning that LoL players that benefit from a positive peer pressure are more likely to find the game easier to play. It seems only logical, as LoL players whose friends also play the game are more likely to learn from others, or to seek advice when facing a difficulty. These findings are consistent with previous research (Lu & Al., 2005) and

corroborate the need for a video game, all the more so for an online competitive game, to carefully guide beginners (Pagulayan & Al., 2003; Choi & Kim, 2004; Sweetser & Wyeth, 2015).

In the context of F2P business model, the first steps a player take in a game are even more critical, as there is no switching cost between competing video games. This is why we extended the TAM model beyond pre-adoption and included Customer Loyalty as a measure of post-adoption behaviour. Following Lee & Tsai (2010) and Mäntymäki & Salo (2011), we found that Attitude Towards Using strongly determines the players' loyalty towards LoL. Simply put, it means that players that have a positive attitude towards this F2P game are more likely to participate and recommend the game to others. Similarly, we observe that PE is indeed another predictor of CL, which is consistent with previous researches (Hsu & Lu, 2007; Lee & Tsai, 2010; Mäntymäki & Salo, 2011).

On the base of our results, we could argue that Riot Games does an amazing job at retaining its players/customers: as stated above, more than half (53.9%) of our sample is composed of "senior players" who have been playing the game for at least 5 years, and it is worth noting that the item that reported the highest mean from our survey (with the exception of MSSC Items) is CL3 – I will continue to play League of Legends in the future ( $\mu = 5.99$ ).

Finally, as the objective of this study was to investigate the profitability of the F2P business model, it was not conceivable not to address the main source of revenue for such video games: the sale of virtual items. After designing our model based on previous research linking continuous use (Mäntymäki & Salo, 2011), time expenditure (Cleghorn & Griffiths, 2015) and Customer Loyalty (Balakrishnan & Griffiths, 2018) with Purchase Intention of Virtual Items, we find similar results, with a statistical significance for the relationship between CL and PIVI. Our model only provides small explanatory power for the construct PIVI ( $R^2 = 0.048$ ), especially in comparison with other studies (Mäntymäki & Salo report a variance explained of 27%, while Balakrishnan & Griffiths, a variance explained of 29.2%.) This low  $R^2$  value may indicate that our independent variables are not sufficient to provide an explanation of our dependent variable, despite our hypotheses being supported. Another explanation would be that LoL players, despite being loyal to the game, are quite resistant to the F2P model and/or virtual goods, which would be consistent with previous findings (Lin & Sun, 2011; Hamari, 2015).

## Chapter 6 - Conclusions

### 6.1. Theoretical implications

To begin with, the present study, by adapting and extending the Technology Acceptance Model in the context of Free-to-play, confirms the pertinence of using this theoretical model to study both pre-adoption and post-adoption behaviour of video game players towards a specific title or genre.

Following Moon & Kim (2001), Hsu & Lu (2007), Lee & Tsai (2010) and Mäntymäki & Salo (2011), we preferred Perceived Enjoyment over Perceived Usefulness in our adaptation of the TAM and found that intrinsic motivation is indeed well-suited to determine the entertainment-purpose use of video games. While the TAM is an established and robust basis to investigate attitude in both the online games and the F2P games contexts, the present research is to our knowledge the first to establish a link between knowledge acquisition, appreciation of aesthetics in eSport broadcasts and an increased perception of the game enjoyability. The lack of articles to directly compare the results can be deemed a good indicator of the pertinence of the current study. With the exception of Törhönen & Al. (2020) and Macey & Al. (2020), academic research linking eSport and video game consumption has been scarce, and this study is the first to link motivations to watch eSport with motivations to play online games. By measuring the players' attitude towards playing and their customer loyalty, the present study covers both pre- and post-adoption behaviours, while bridging the acquisition and the retention of customers, two crucial notions in the context of F2P games.

Secondly, some interesting findings result from the extension of the TAM with social influence components (in our study, Subjective Norms and Critical Mass). The absence of statistical significance between SN and Attitude, and between CM and Attitude respectively contradicts Wu & Liu (2007) and Hsu & Lu (2004) findings. This suggests that LoL players' attitude towards the game is not affected by peer pressure, nor by the fact that their peers are themselves LoL players or not. However, a clear relationship exists between CM and SN, and between SN and PEOU, indicating that when significant others play the game, it provides a clear signal that they approve online gaming, and that the internalization of social norms directly influence players' evaluation of whether the game is easy to use or not.

Finally, this study is, to our knowledge, only the second to prove the predictive role of customer loyalty on the intention to purchase virtual items in the context of a free to play game: following Hamari (2015), we extend Mäntymäki & Salo (2011) and Balakrishnan & Griffiths

(2018) findings. It is important to note, however, that the small variance explained of PIVI (4.8%) suggests the existence of other explanatory variables, which indicates a new path for future research.

## **6.2. Managerial implications**

The present study linked motivations to watch eSport with two determinants of video games adoption: Knowledge Acquisition positively affects Perceived Ease of Use and Perceived Enjoyment, while Aesthetics only predicts PE. Therefore, this study recognizes that Riot Games has all interest in focusing on these two aspects of the competition broadcast.

Firstly, considering the effect of KA on PEOU and PE (and the effect of PEOU on PE), we suggest that Riot Games could increase the “educative” dimension of its eSport streams.

Currently, during the time separating two games, the commentators step back in favour of the “analyst deck”, which usually comprises two to three LoL professionals, and a discussion follows regarding the events that occurred in the previous match. These post-game analyses are very useful to new players: while an opposition between two teams often lasts less than thirty seconds, the analysts take the time to decompose these phases in which the stakes are crucial, and explain why one team dominated the other one, and what could have been alternative options. In addition, more complex analyses are available on the official “LoL eSports” YouTube page: while they also consist in “Team Fight Breakdowns” (the name of this video series), this format allows a much deeper understanding of the professionals’ performance, with explanatory diagrams superimposed on the images of the game, and with regular pauses allowing analysts to digress on certain teamplay strategies. More recently, Riot Games, in collaboration with Twitch, introduced in March 2020 a new extension for the LoL streams. If a LoL streamer (for example, a professional player who broadcasts his training sessions) activates this extension, it gives his viewers an access to an interactive panel that displays a number of real-time statistics about the match at hand, and “a match history, allowing viewers to see what order the streamer bought items during the match” (Lyles, 2020, p. 1).

These initiatives indicate that Riot Games is already aware of the tightness of the KA – PEOU relation, and that the developer is conscious of the difficulty that new players encounter when learning a game as complex as LoL. However, these videos are quite complex and seem to be designed to advanced players, rather than destined for beginners. In addition, they are only available in English, limiting the number of players who could take advantage from this useful content. We argue that a similar series of videos, focused on simple game mechanics or

concepts, and translated in numerous languages, would better serve the purpose of initiating beginners. A second and simpler initiative would be to integrate the LoL tracker to eSport broadcast, letting eSport enthusiasts gain a deeper understanding of the competition as it takes place.

In addition to KA, Aesthetics were found to have a statistical significance with LoL players' PE. Thus, we assume that increasing the quality of eSport broadcasts, notably by improving the already elaborate live-event scenography, would predict higher levels of enjoyment for eSport enthusiasts. However, by looking at the previous editions of the LoL World Championship, with a (virtual) dragon flying above Beijing's Bird Nest in 2017, and two bands performing an augmented reality show in the last four years, one could say that Riot Games already perceived this opportunity (Webster, 2019). Then, what is left to improve?

Following Cheung & Huang (2011), who argued that the quality of the observer-cameraman was enough to make the StarCraft audience 'cheer, laughter, and clap hand', we argue that eSport broadcasts themselves could be improved, for example by offering more original viewpoints than the classic "view from above" every LoL player is accustomed to.

To continue on the matter of motivations to watch eSport, it is important to the relationships linking Social Interaction and Escapism with PE was deemed to be statistically insignificant in the context of our study. Earlier, we argued that this finding may be the result of the "toxicity" of part of the LoL community, and reviewed the implementation by Riot Games of a players' tribunal, as a mean to reduce anti-social behaviour (McWerthor, 2012; Kou & Nardi, 2013; Kou & Gui, 2014). We argue that pursuing efforts toward the reduction of "bad attitudes" may increase the quality of player-to-player social interaction, and allow them to truly escape the stress of daily activities. Subsequently, following Hamilton & Al. (2014) who argue that stream integrated chats are sometimes too crowded and do not allow meaningful conversation, we propose that eSport broadcast could offer an alternative integrated-chat organization, for example by splitting the viewers according to the team they support.

Concluding this section, we want to emphasize the need for Riot Games to acknowledge the importance of their players' loyalty, as it directly predicts purchase intention of virtual items. Our sample was mostly comprised of senior players, and most respondents expressed that they intended to continue playing the game in the future. We argue that, by carefully managing loyal players, for example by offering them rewards on special occasions (on the date of creation of the player's account, or during a celebration of the game's anniversary) may create an incentive for players to "support a good game", as quoted in Hamari & Al. (2017).

### 6.3. Limitations of the study and future research

There are some limitations in the present study.

First and foremost, by focusing on a specific F2P game, we limited the external validity of our research. What has been proven statistically significant in the context of LoL might not be true for other games, genres, or business models. However, we argue that this study constitutes a solid framework to study the links between eSport consumption and motivations to play F2P games, and that it could be applied in further research, as long as some criteria are conserved: the game should be a F2P game with a strong focus on eSport, and limit the sale of virtual items to cosmetic enhancements. Example are numerous, such as Fortnite or Apex Legends, or Valorant, a competitive FPS developed by Riot Games.

Secondly, while this research intended to measure the enhancement of profitability for F2P games, the author willingly limited the study of sources of revenue to the field of virtual items. It could be argued that other ways of generating revenues for games using the F2P business model involved sales of gear/merchandise (e.g. Riot Game Store, selling LoL-inspired streetwear and collectibles), partnership operations (see Marvel's Avengers Endgame x Fortnite, Kain, 2019), or, as quoted in Civelek & Al. (2018) some more unusual ways, such as when Niantic charged intended to charge \$3000 for a business to become a PokéStop, which attracts Pokémon Go users (Fishman, 2019). However, the sale of virtual items remains the core source of revenues for most F2P games.

Similarly, the economics of eSport aren't addressed in this study. While the entertainment industry is rising in popularity, and that eSport consumption has an impact on players' attitude and customer loyalty, it is difficult to evaluate the cost it implies for game developers and other stakeholders. There is a current debate on the metrics that should be used to quantify eSport viewership (Hsu, 2018), and eSport is not necessarily profitable by itself (Taylor, 2018): for example, Riot Games has spent "way over \$100 million per year on global eSports" but is far from breaking-even (Valentine, 2018). Furthermore, we do not mention the means by which eSport directly generate revenues: sale of event tickets and advertising in online broadcast for game developers and competition organizers, sponsorship and sale of merchandise for eSport team and athletes.

On the matter of virtual items, this study makes no difference between the different types of purchasable content (hedonic, social, functional, as of Lehdonvirta, 2009). This is easily explained by the non-presence of functional items in LoL (Kordyaka & Hribersek, 2009),

but it would have been interesting certain motivations to watch eSport to certain types of virtual items: 'Aesthetics' with hedonic items such as skins, or 'Drama' (uncertainty of outcome enthusiasts) with random loot virtual items, such as LoL's chests and World's Orbs (Annex A).

In addition, we did not address problematic issues linked with the use of F2P games: link between the F2P model and gambling activities has been investigated by Macey & Hamari (2018), while the notion of addiction towards online video games is explored in Balakrishnan & Griffiths (2018). Similarly, the limits of the F2P model are not addressed in a specific section of this study: as argued by many researchers (Lin & Sun, 2011; Alha & Al., 2014; Hamari, 2015; Hamari & Al., 2017), the growing presence of in-game purchases has faced the resistance of players and developers alike: the F2P is not a miracle solution! This may explain the low means reported on Items 2 to 5 of PIVI: while LoL players sometimes engage in purchase of virtual items, they do not have a positive attitude towards the F2P model.

Concluding this section, it is regretful that the concept of Flow, present in numerous studies on motivations to play online games (e.g. Choi & Kim, 2004; Su & Al., 2016) and often linked with the TAM (Hsu & Lu, 2007; Lee & Tsai, 2010) was not included in our final research model due to its bad outer loadings, Cronbach's Alpha, CR and AVE. We recommend using this construct in further study, by adapting a more complex scale than the one we selected, for example Koufaris' (2002) 15-item scale.

Finally, by focusing on eSport spectators, the present study does not allow us to compare eSport and non-eSport consumers in terms of perceived enjoyment, perceived ease of use, attitude, customer loyalty and purchase intention of virtual items. Further research may focus on this comparison, as it may allow to draw further understanding on the role of eSport as enhancer of F2P games' profitability.



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## Annexes

### Annex A – Examples of virtual items sold in League of Legends

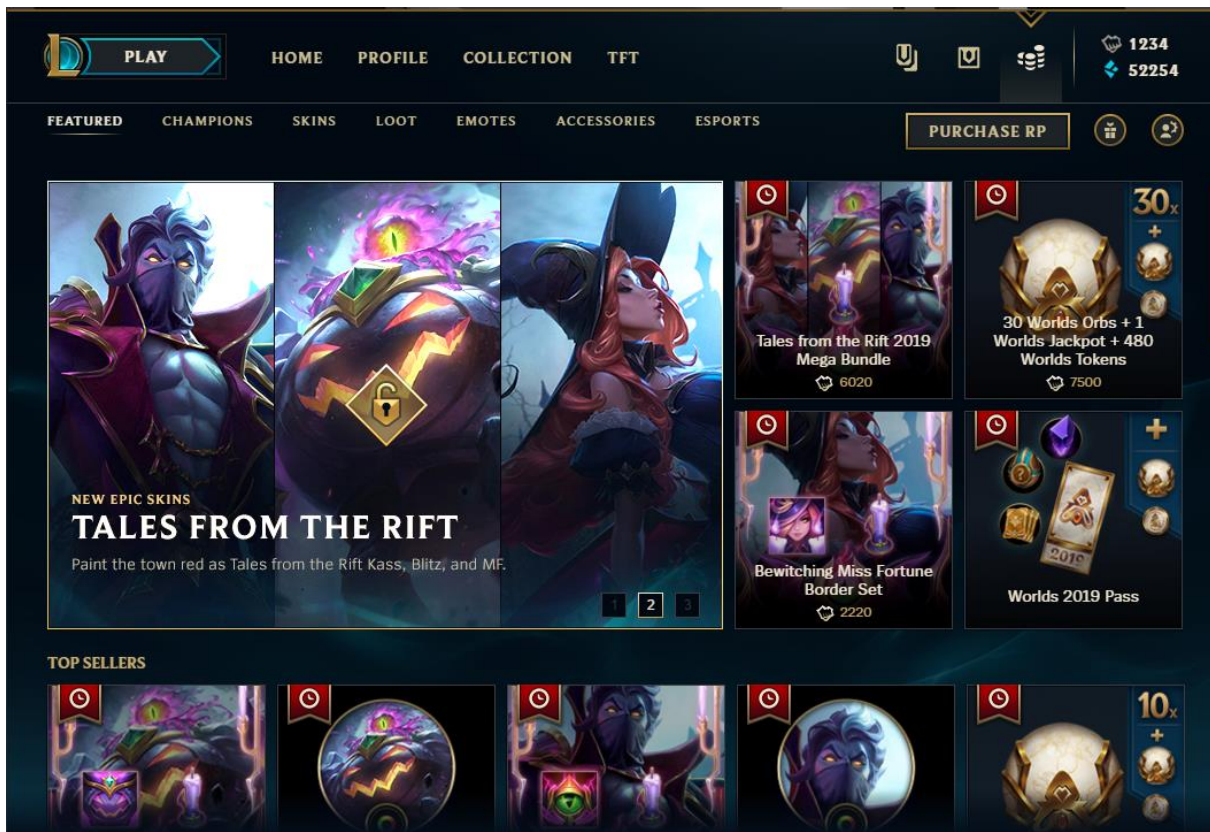
Below, an example of a special occasions' sale of virtual items: here, during Halloween - October to November 2019. Other special occasions include Christmas, Valentine's Day, Chinese New Year, Easter, Summer times with the "Pool Party" skins, etc.

On this screenshot of the game's Shop, one can see on the top right corner the Riot Points (RP) virtual currency, purchasable at the 1350RP = 10€ rate, and the Blue Essences currency, an equivalent of experience gained by playing.

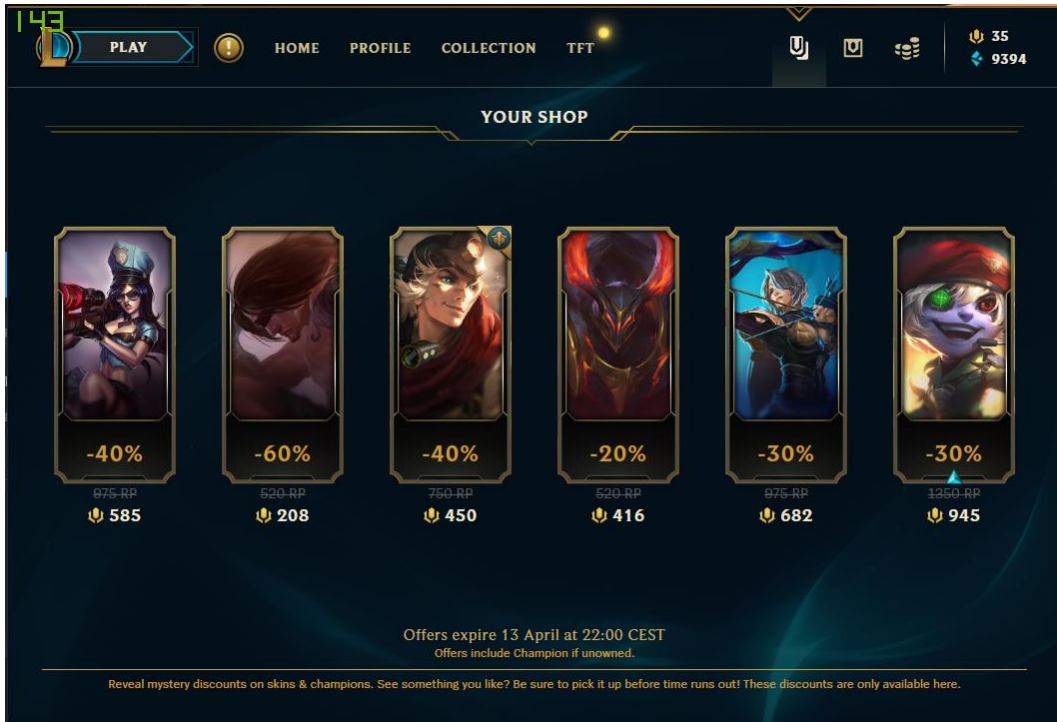
Additional appearances or "skins" from the "Tales of the Rift" set are only accessible during this event, as well as previous skins released during the Halloween period. Discounts are offered in the player decides to purchase the "Mega Bundle", that comprises the whole set of newly introduced skins.

The Worlds 2019 Pass was a purchasable season pass allowing for special rewards during the League of Legends Worlds Championship 2019. Rewards were gained by either playing the game and concluding missions, or by watching the LoL eSport competition unfold on Twitch.

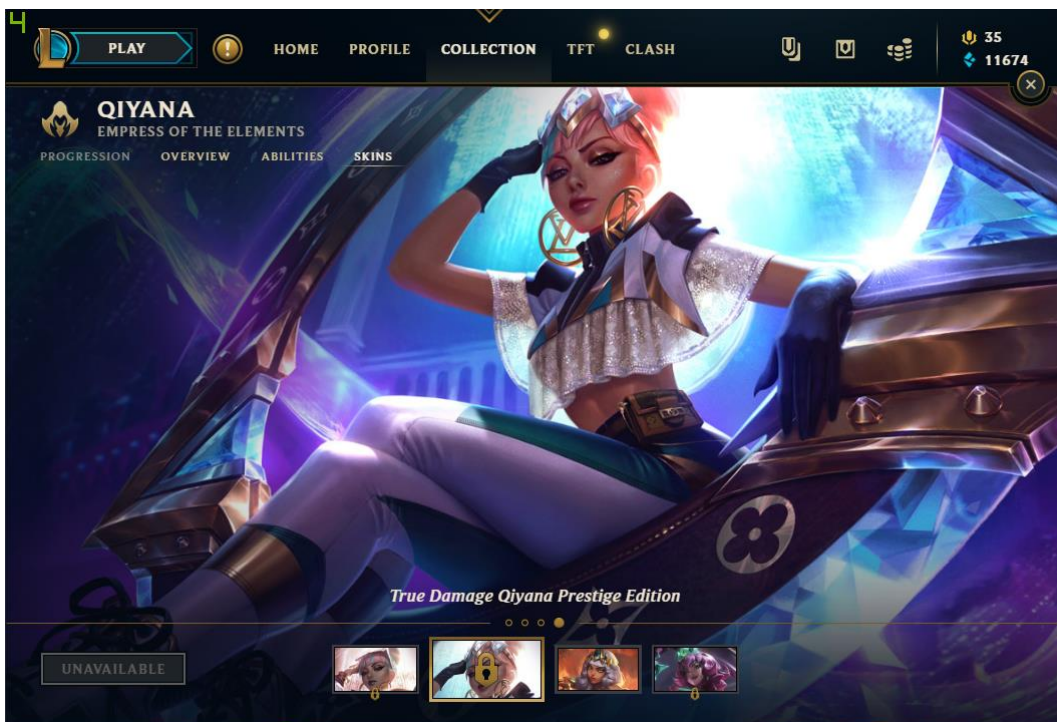
World Orbs (purchasable in quantities of one, 10 and 30) are random chests that contain a random customization item the player does not previously own. In this Worlds Championship iteration of "random loot", players were given an opportunity to unlock skins designed by eSport teams that won the previous World Championships.



Below, a “mystery reveal” discount is presented. From time to time, players are given an access to this customized and personalized shopping list, which comprises skins for champion they play the most. The player has to click on each of the six thumbnails, and unveils the associated skin and discount offered. Of course, these skins are purchasable for a limited time only, as displayed at the bottom of the screenshot.

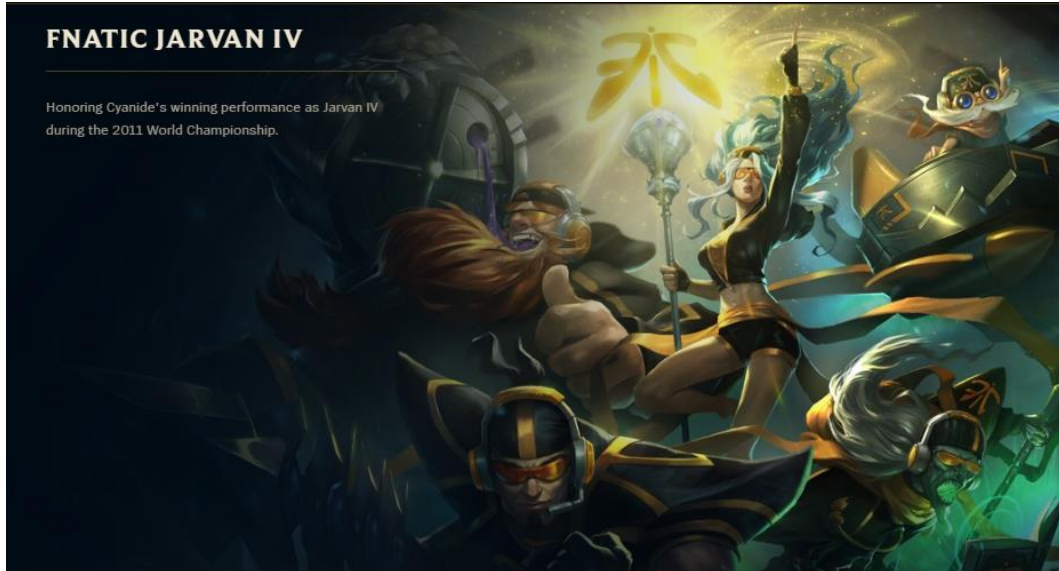


Below, the presentation of the “Prestige skin” for champion “Qiyana”, designed in collaboration with Louis Vuitton and released during the eSport Worlds Championship 2019.

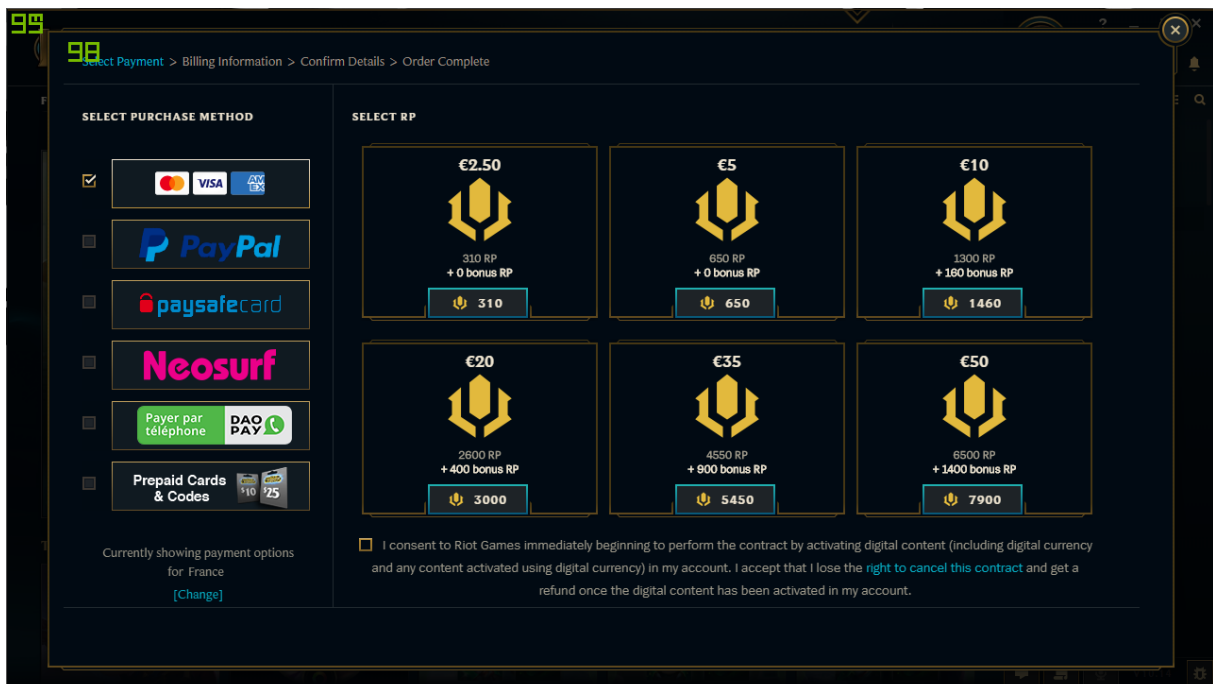




Below, a presentation of a set of skins, designed according to the wishes of Fnatic eSport team, the winners of the Season 1 Worlds. Riot Games designed a skin for the most-played champion of each of the five players.



Below, a presentation of the purchasing options for Riot Points, Riot Games' virtual currency. These purchasing options include credit/debit card, PayPal, Paysafe cards, and others. The payment options and conversion rate depend on your location (here, European West: France).



## **Annex B – Online communities targeted for survey dissemination**

[https://twitter.com/Kwik\\_VIET](https://twitter.com/Kwik_VIET) (personal page)

<https://www.facebook.com/kwik.viet> (personal page)

<https://www.facebook.com/groups/hullofflame/>

<https://www.facebook.com/groups/eSportBordeaux>

<https://www.facebook.com/groups/557909250922163> (EBP Promo 2018)

<https://www.facebook.com/groups/36095761074> (ISCTE - IUL)

<https://www.facebook.com/groups/321458847985598> (Entraide BEM)

<https://www.facebook.com/groups/593018404073235> (Fnatic Fans)

<https://www.facebook.com/groups/fans.League.of.Legends.fr>

<https://www.facebook.com/groups/LoLUK>

<https://www.facebook.com/groups/ThisIsIrishLoL>

<https://www.facebook.com/LeagueOfSupporting>

<https://www.reddit.com/r/G2eSports/>

<https://www.reddit.com/r/lolesports/>

<https://www.reddit.com/r/esports/>

<https://www.reddit.com/r/TeamSolomid/>

<https://www.reddit.com/r/leagueoflegends/>

<https://www.jeuxvideo.com/forums/>

Discord – TeamGalaxy (community Discord of French LoL streamer Rx\_Dye)

Discord – Chamallow Academy (community Discord of French LoL streamer Chamallow San)

Discord – EU Boards (replaces official League of Legends forum since March 2020)

Discord – Kroivance eSport Club (community Discord of French LoL eSport host and commentator Krok)

Discord – League of Legends France

Discord – League of Legends United Kingdom

Discord – Woody Fruity (community Discord of American LoL streamer Woody Fruity)

Discord – OGTV (community Discord of official French LoL eSport broadcaster O’Gaming TV)

## Annex C – Screenshot of the covering letters to the questionnaire

Example of the first covering letter, here on the r/leagueoflegends subreddit.

Posted by u/SayaViet 1 month ago

### I need your help ! (Master Thesis: League of Legends and eSport)

Hello everyone !

I'm a student and EUW League player, currently working on my Master's Thesis. In short, I'm investigating connections between eSport consumption and the "success" of League of Legends business model.

Thus, **I am seeking answers from League players that have watched an eSport match at least once**, and I couldn't dream of a better place to ask !

If you meet the criteria, please feel free to contribute ! The survey takes about 7 min to answer, and answers will remain anonymous.

However, if you're interested in hearing about the results, I'll be more than happy to share them with you when I'm done analyzing the data. Also, feel free to comment if you have some suggestions, or want to offer some advice.

Thanks in advance, and GLHF for your next games !  
Etienne "SayaViet"

Here is the link:

" [https://kedgebs.eu.qualtrics.com/jfe/form/SV\\_dasjKD40pnjJ9X](https://kedgebs.eu.qualtrics.com/jfe/form/SV_dasjKD40pnjJ9X) "

7 Comments Share Edit Post Save Hide ... 75% Upvoted

About Community

r/leagueoflegends

This is a subreddit devoted to the game League of Legends.

4.2m putting on sunscreen 22.0k self-isolating at home

Created 13 janv. 2010

JOINED

CREATE POST

COMMUNITY OPTIONS

ADVERTISEMENT

Example of the second covering letter, here on the r/G2eSports subreddit.

r/G2eSports · Posted by u/SayaViet 10 days ago

### Last weekend for collecting answers - 50€ worth of RP to win !

Hi everyone! I'm a League of Legends player and business student, currently writing my Master's Thesis on LoL and eSport. I'm looking for answers to my questionnaire!

I just need to collect a few more answers before Sunday, June 21st, and therefore decided to offer 50€ worth of RP to the final respondents!

In order to win one of the five 1380RP (10€) vouchers, you need to:

- Be a League of Legends player;
- Have already watched an eSport competition (e.g. LoL Worlds Championship finals);
- Answer the ~7min long survey attentively and according to your personal experience;
- Share your email address and Summoner Name in the last page!

The five winners will be selected randomly on Monday, June 22nd, and contacted by mail!

To access the survey: [https://kedgebs.eu.qualtrics.com/jfe/form/SV\\_dasjKD40pnjJ9X](https://kedgebs.eu.qualtrics.com/jfe/form/SV_dasjKD40pnjJ9X)

Feel free to share the survey to your Summoner friends!

Thanks in advance for your help! And GLHF for your next games!

Etienne "SayaViet"

0 Comments Share Edit Post Save Hide ... 100% Upvoted

r/G2eSports

G2 is a world premier esports club founded in November, 2013 by Carlos 'ocelote' Rodriguez, of League of Legends fame. Carlos now serves as CEO of the club, which currently includes professional teams in League of Legends, Counter-Strike:Global Offensive, Rocket League, Rainbow Six Siege, Fortnite, Hearthstone, and SIM Racing Games.

16.7k Members 64 Online

Created 26 déc. 2015

JOINED

COMMUNITY OPTIONS

## Annex D - Questionnaire

### Start of Survey

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#### Start of Block: Screening questions

---

**SQ1** - Have you ever played League of Legends?

- Yes (1)
- No (2)

*Skip To: End of Survey If Have you ever played League of Legends? = No*

**SQ2** - Have you ever watched a professional League of Legend match (LoL eSport)?  
(For example: League of Legends Worlds 2019 Semi-Finals : G2 eSports vs SKT T1)

- Yes (1)
- No (2)

*Skip To: End of Survey If Have you ever watched a professional League of Legend match (LoL eSport)? (For example: League of... = No*

#### End of Block: Screening questions

---

#### Start of Block: Demographics

---

**DemGen** - What is the gender you identify the most with?

- Male (1)
- Female (2)
- Other (3)
- Prefer not to say (4)

**DemNat** - Which country do you live in?

---

**DemEd** - What is the highest degree or level of school you have completed?

- Less than a high school diploma (1)
- High school degree or equivalent (2)
- Bachelor's degree (e.g. BA, BS) (3)
- Master's degree (e.g. MA, MS, MEd) (4)
- Doctorate (e.g. PhD, EdD) (5)
- Other (6)

**DemEmp** - What is your current employment status?

- Employed full time (1)
- Employed part time (2)
- Unemployed (3)
- Student (4)
- Retired (5)
- Self-Employed (6)
- Unable to work (7)

**DemAge** - How old are you?

- Under 15 (1)
- Between 16 and 20 (2)
- Between 21 and 25 (3)
- Between 26 and 30 (4)
- Between 31 and 35 (5)

- Between 36 and 40 (6)
- Over 40 (7)

**End of Block: Demographics**

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**Start of Block: Player and Spectator profile**

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**ProGamExp1** - How long have you been playing League of Legends?

- Under 6 months (1)
- Between 6 months and a year (2)
- Between one and three years (3)
- Between three and five years (4)
- Between five and seven years (5)
- Over 7 years (6)

**ProGamExp2** - On average, how often do you play League of Legends?

- Rarely (1)
- Occasionally (2)
- Three to four times a month (3)
- One to two times a week (4)
- More than two times a week but not every day (5)
- Every day (6)

**ProPurHab** - On average, how much money do you spend on League of Legends every month?  
(in €)

- Not at all (1)
- Less than 10 (2)
- 11 to 20 (3)
- 21 to 40 (4)
- 41 to 80 (5)
- 81 to 100 (6)
- 101 to 150 (7)
- Over 150 (8)

**ProeSportExp** - How often do you watch League of Legends eSport?

- Never (more rarely than a year) (1)
- Yearly (once a year) (2)
- Monthly (once a month) (3)
- Weekly (once a week) (4)
- Daily (5)

**End of Block: Player and Spectator profile**

---

**Start of Block: Motivations to watch eSport**

---

**MSSC** - We are interested in what motivates you to watch League of Legends professional matches (LoL eSport). The following statements are indicative of specific motives. Please rate the extent to which you disagree or agree with each of them, using the scale below.

*Order of questions is randomized every time for each survey response.*

*Scale details: 1 – Strongly Disagree / 2 – Disagree / 3 – Slightly Disagree / 4 – Neither Agree nor Disagree / 5 – Slightly Agree / 6 – Agree / 7 – Strongly Agree*

**MSSC\_KnowledgeAcquisition1** - I increase my knowledge about the game by watching matches

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_KA2** - I increase my understanding of the game strategies by watching matches

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_KA3** - I can learn about the technical aspects of the game by watching matches

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_SocialInteraction1** - Interacting with other fans is a very important part of watching LoL

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_SI2** - I enjoy talking with other fans when watching matches

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_SI3** - Watching matches is a good opportunity to socialize with others

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_Escapism1** - Watching matches provides a diversion from "life's little problems" for me

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_E2** - Watching matches provides an escape from my day-to-day routine

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_E3** - Watching matches is a change of pace from what I regularly do

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_VicariousAchievement1** - I feel like I have won when the team/player I prefer wins

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_VA2** - I feel a personal sense of achievement when the team/player I prefer does well

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_VA** - I feel proud when the team/player I prefer plays well



Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_Aesthetics1** - I appreciate the beauty inherent in the game

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_A2** - I enjoy the natural beauty of the game

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_A3** - I enjoy the gracefulness associated with the game

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_Novelty** - I enjoy the novelty of a new team or player on the professional scene

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_N2** - I like having the opportunity to watch a new team or player

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**MSSC\_N3** - The opportunity to watch games with a new team or player is fun

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

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### End of Block: Motivations to watch eSport

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### Start of Block: Perception of League of Legends

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**Perception** - We are interested in knowing how you feel about playing League of Legends. The following statements are indicative of specific perceptions towards the game. Please rate the extent to which you disagree or agree with each of them, using the scale below.

*Order of questions is randomized every time for each survey response.*

*Scale details: 1 – Strongly Disagree / 2 – Disagree / 3 – Slightly Disagree / 4 – Neither Agree nor Disagree / 5 – Slightly Agree / 6 – Agree / 7 – Strongly Agree*

**CriticalMass1** - Most people in my group play League of Legends frequently

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**CM2** - Most people in my community play League of Legends frequently

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**CM3** - Most people in my class/office play League of Legends frequently

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**SubjectiveNorms1** - My colleagues think that I should play League of Legends

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**SN2** - My classmates think that I should play League of Legends

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**SN3** - My friends think that I should play League of Legends

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**PerceivedEaseOfUse1** - It (was) is easy for me to become skilful at playing League of Legends

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**PEOU2** - Learning to play League of Legends is (was) easy for me

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**PEOU3** - I find League of Legends easy to play

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**PEOU4** - My interaction with the game is clear and understandable

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**PerceivedEnjoyment1** - Playing League of Legends is exciting

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**PE2** - Playing League of Legends is enjoyable

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**PE3** - Playing League of Legends gives me a lot of pleasure

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**AttitudeTowardsUsing1** - I think playing League of Legends is good for me

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**ATT2** - I think playing League of Legends is a good leisure activity

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**ATT3** - I have a positive opinion about playing League of Legends

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**CustomerLoyalty1** - It is worth playing League of Legends

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**CL2** - League of Legends is my first choice of online video game

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**CL3** - I will continue to play League of Legends in the future

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**CL4** - I am willing to say positive things about League of Legends to others

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**CL5** - If others want to play a Free-to-Play online video game, I will recommend this game

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**CL6** - I will encourage friends and relatives to play League of Legends

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**End of Block: Perception of League of Legends**

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**Start of Block: Virtual Items**

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**PIVI** - We are interested in your purchasing habits of virtual items in League of Legends. Virtual items include champions, skins, rune pages, chests and others, purchased with real money through the virtual currency "Riot Points" (RP). Please rate the extent to which you disagree or agree with each statement, using the scale below.

*Order of questions is randomized every time for each survey response.*

*Scale details: 1 – Strongly Disagree / 2 – Disagree / 3 – Slightly Disagree / 4 – Neither Agree nor Disagree / 5 – Slightly Agree / 6 – Agree / 7 – Strongly Agree*

**PurchaseIntentionsofVirtualItems1** - I intend to continue purchasing League of Legends virtual items

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**PIVI2** - I strongly recommend others to purchase League of Legends virtual items

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**PIVI3** - I find purchasing League of Legends virtual items to be worth-while

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**PIVI4** - I am likely to frequently purchase League of Legends virtual items in the future

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

**PIVI5** - I plan to spend more on purchasing League of Legends virtual items

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

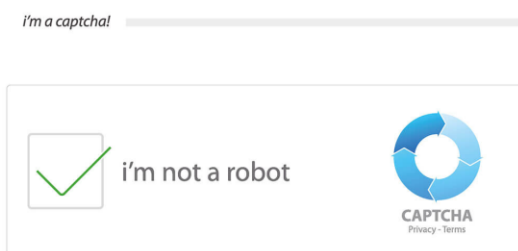
**End of Block: Virtual Items**

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**Start of Block: Lottery Information**

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**Q19** - Just to make sure you are not a (Nunu) bot:



**Q20** - Thank you, your answers have been recorded! If you would like to participate in the lottery and try to win a voucher of 1380 RP - 10€ on League of Legends (five vouchers to win), please fill in your email address, Summoner Name and Region. Winners will be randomly selected on Monday 22nd June and contacted by email!

Please indicate a valid email address: (1)

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Please indicate your Summoner Name: (2)

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Please indicate your Region (EUW/NA/etc.): (3)

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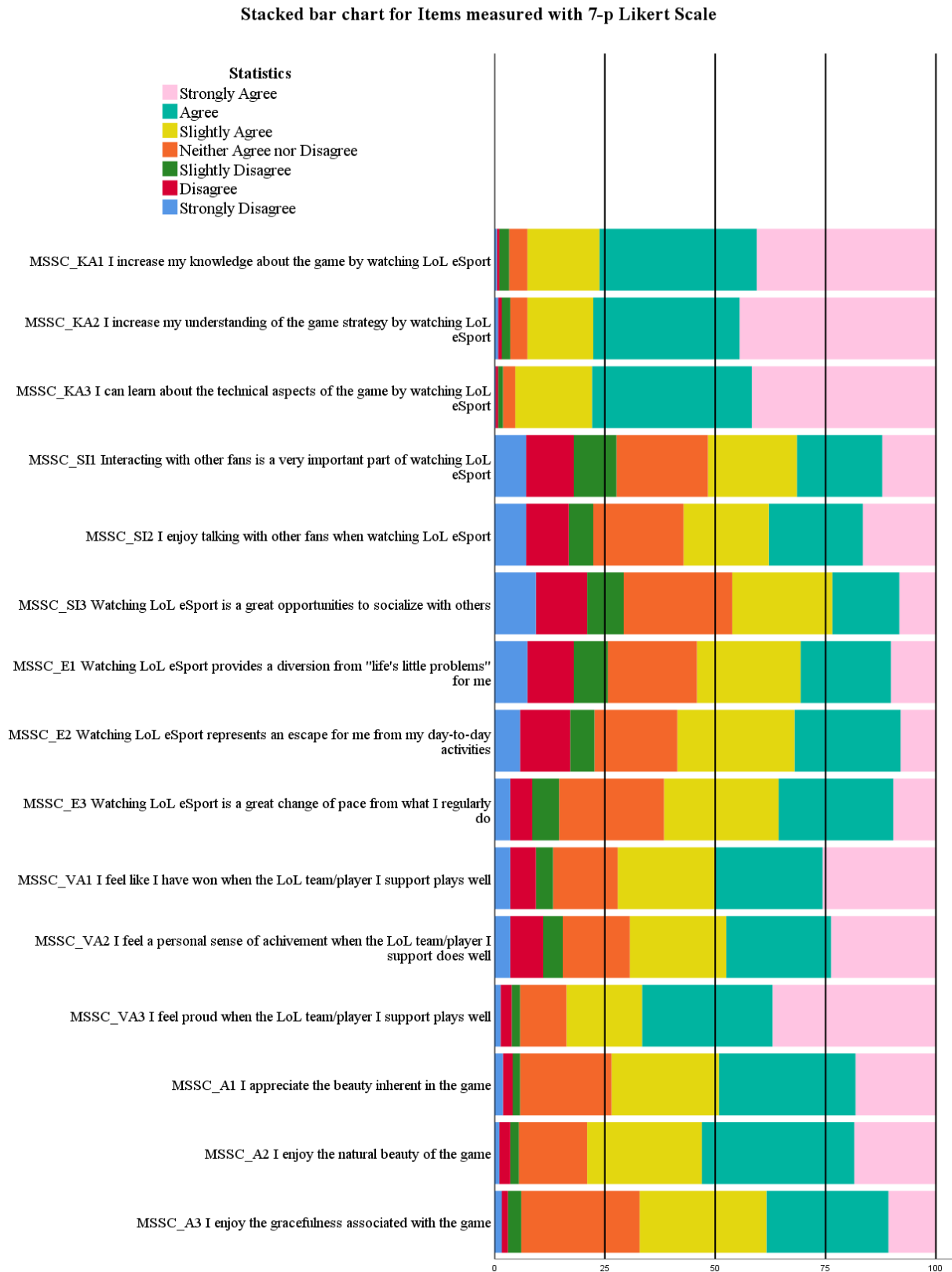
**End of Block: Lottery Information**

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**End of Survey**

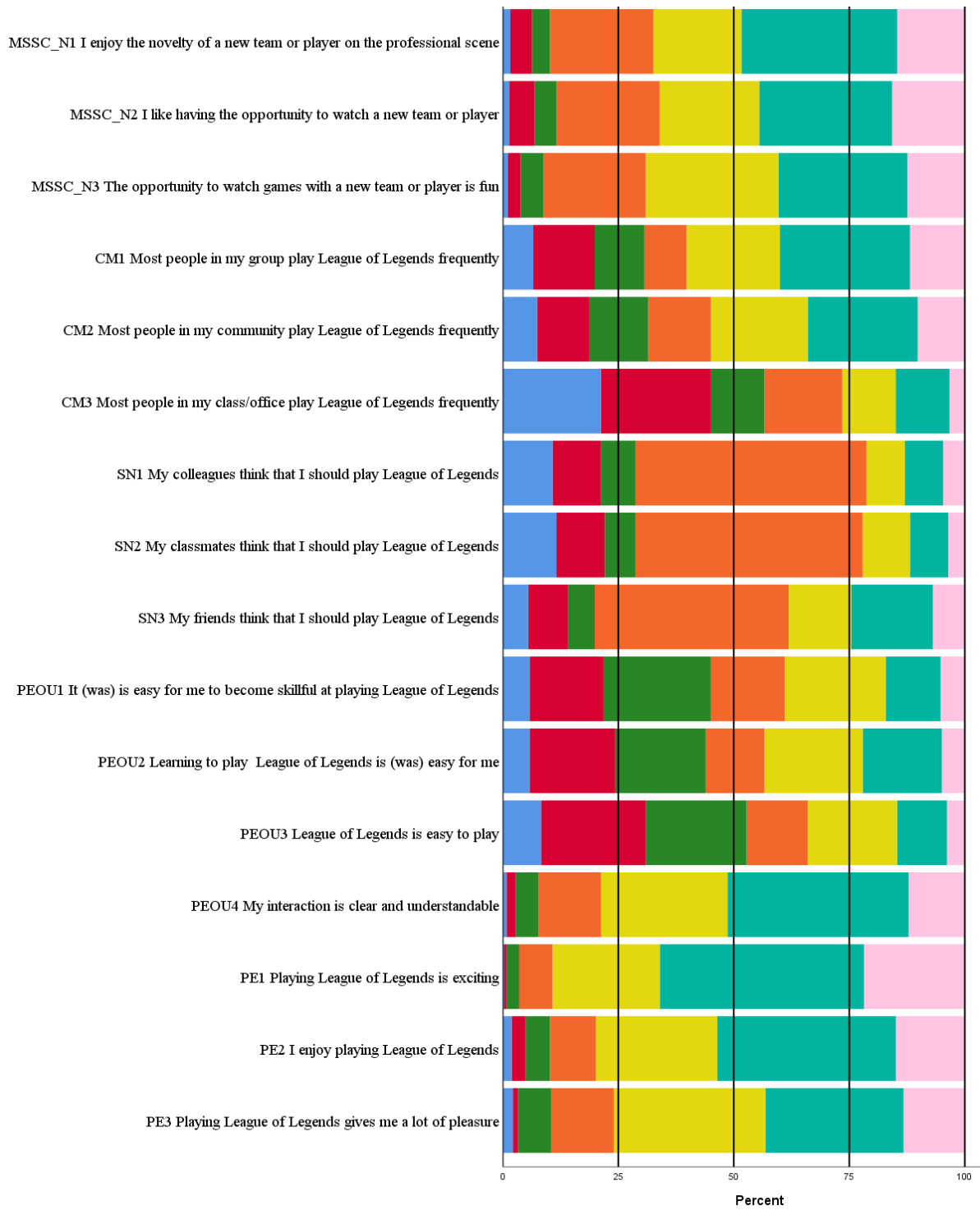
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**Annex E – Stacked bar - chart for Items measured with 7-p Likert Scale**



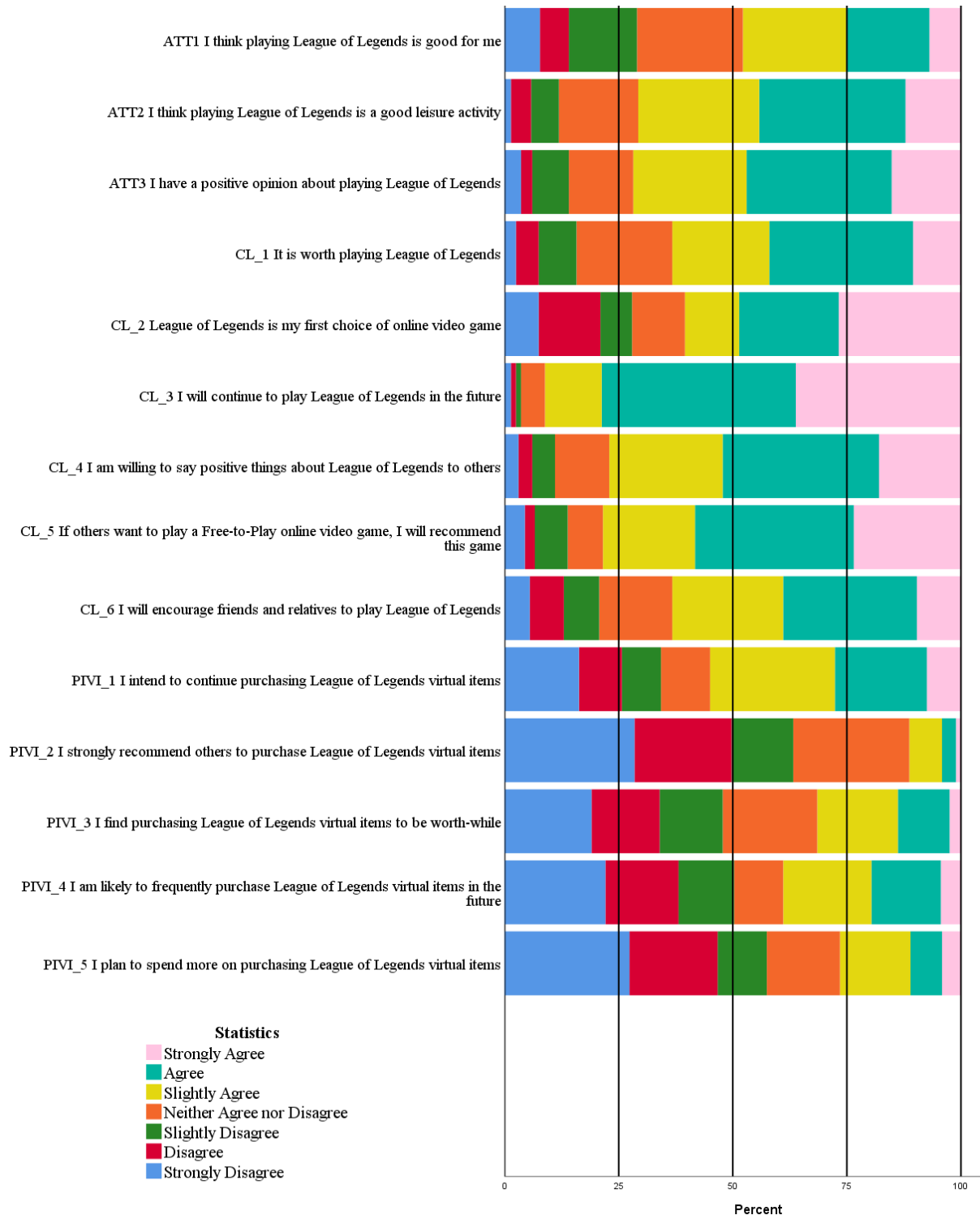
Note: Items Knowledge Acquisition 1 to Aesthetics 3 are presented above.

# INVESTIGATING THE ROLE OF ESPORT ON THE FREE TO PLAY BUSINESS MODEL



Note: Items Novelty 1 to Perceived Enjoyment 3 are presented above.

INVESTIGATING THE ROLE OF ESPORT ON THE FREE TO PLAY BUSINESS MODEL



Note: Items Attitude Towards Using 1 to Purchase Intention of Virtual Items 5 are presented above.

**Annex F – Descriptive statistics for Items measured with 7-p Likert Scale**

Descriptive frequencies of Items measured with 7-p Likert Scale

Item	Mean	Median	Std. Deviation	Item	Mean	Median	Std. Deviation
MSSC_KA1	6.04	6.00	1.078	CM1	4.55	5.00	1.827
MSSC_KA2	6.09	6.00	1.122	CM2	4.41	5.00	1.780
MSSC_KA3	6.12	6.00	0.973	CM3	3.22	3.00	1.805
MSSC_AS1	6.47	7.00	0.802	SN1	3.78	4.00	1.503
MSSC_AS2	6.27	6.00	0.902	SN2	3.75	4.00	1.494
MSSC_AS3	6.12	6.00	1.006	SN3	4.30	4.00	1.509
MSSC_SI1	4.43	5.00	1.752	TAM_PEOU1	3.89	4.00	1.598
MSSC_SI2	4.65	5.00	1.791	TAM_PEOU2	3.96	4.00	1.676
MSSC_SI3	4.18	4.00	1.717	TAM_PEOU3	3.60	3.00	1.641
MSSC_E1	4.44	5.00	1.719	TAM_PEOU4	5.31	6.00	1.195
MSSC_E2	4.53	5.00	1.644	TAM_PE1	5.72	6.00	1.035
MSSC_E3	4.80	5.00	1.454	TAM_PE2	5.31	6.00	1.335
MSSC_D1	5.97	6.00	1.141	TAM_PE3	5.16	5.00	1.297
MSSC_D2	5.96	6.00	1.296	TAM_ATT1	4.29	4.00	1.612
MSSC_D3	6.09	6.00	1.155	TAM_ATT2	5.08	5.00	1.357
MSSC_D4	6.26	6.00	0.939	TAM_ATT3	5.10	5.00	1.477
MSSC_VA1	5.22	5.50	1.622	FLOW_1	5.57	6.00	1.159
MSSC_VA2	5.10	5.00	1.661	FLOW_2	5.45	6.00	1.297
MSSC_VA3	5.76	6.00	1.352	FLOW_3	3.69	4.00	1.760
MSSC_A1	5.29	5.00	1.320	FLOW_3_R	4.31	4.00	1.760
MSSC_A2	5.40	6.00	1.249	FLOW_4	4.82	5.00	1.331
MSSC_A3	5.06	5.00	1.220	FLOW_5	4.62	5.00	1.488
MSSC_PA1	2.57	2.00	1.709	FLOW_6	5.38	6.00	1.450
MSSC_PA2	1.62	1.00	1.154	CL_1	4.90	5.00	1.455
MSSC_PA3	1.77	1.00	1.336	CL_2	4.80	5.00	2.016
MSSC_N1	5.12	5.00	1.407	CL_3	5.99	6.00	1.149
MSSC_N2	5.06	5.00	1.431	CL_4	5.27	6.00	1.439
MSSC_N3	5.08	5.00	1.273	CL_5	5.35	6.00	1.562
MSSC_EA1	5.48	6.00	1.387	CL_6	4.73	5.00	1.624
MSSC_EA2	2.89	2.00	1.813	PIVI_1	4.14	5.00	1.916
MSSC_EA3	4.06	4.00	1.883	PIVI_2	2.75	3.00	1.512
MSSC_EA4	3.87	4.00	1.851	PIVI_3	3.47	4.00	1.741
				PIVI_4	3.52	3.00	1.933
				PIVI_5	3.10	3.00	1.830



**Annex G – Reliability and validity test for the complete data**

Constructs	Items	Outer Loadings	Cronbach's $\alpha$	CR	AVE
Knowledge Acquisition	MSSC_KA1	0.845	0.840	0.903	0.757
	MSSC_KA2	0.901			
	MSSC_KA3	0.863			
Vicarious Achievement	MSSC_VA1	0.864	0.830	0.897	0.743
	MSSC_VA2	0.885			
	MSSC_VA3	0.836			
Aesthetics	MSSC_A1	0.870	0.752	0.859	0.671
	MSSC_A2	0.854			
	MSSC_A3	0.726			
Escapism	MSSC_E1	0.788	0.695	0.823	0.609
	MSSC_E2	0.760			
	MSSC_E3	0.792			
Social Interaction	MSSC_SI1	0.906	0.801	0.879	0.709
	MSSC_SI2	0.793			
	MSSC_SI3	0.823			
Novelty	MSSC_N1	0.854	0.847	0.907	0.765
	MSSC_N2	0.911			
	MSSC_N3	0.858			
Critical Mass	CM1	0.845	0.766	0.864	0.680
	CM2	0.848			
	CM3	0.780			
Subjective Norms	SN1	0.872	0.829	0.897	0.744
	SN2	0.854			
	SN3	0.863			
Perceived Ease Of Use	PEOU1	0.605	0.635	0.755	0.514
	PEOU2	0.634			
	PEOU4	0.880			
Perceived Enjoyment	PE1	0.718	0.735	0.849	0.653
	PE2	0.865			
	PE3	0.835			
Attitude Towards Using	ATT1	0.815	0.752	0.858	0.668
	ATT2	0.784			
	ATT3	0.851			
Customer Loyalty	CL4	0.820	0.786	0.874	0.698
	CL5	0.841			
	CL6	0.846			
Purchase Intention of Virtual Items	PIVI1	0.864	0.900	0.925	0.710
	PIVI2	0.821			
	PIVI3	0.856			
	PIVI4	0.848			
	PIVI5	0.825			

### Annex H – Discriminant validity – Fornell-Larcker criterion

<b>Fornell-Larcker Criterion</b>	Aesthetics	Attitude	Crit. Mass	Cus. Loy	Escapism	Know. Acc	Novelty	P.E.O.U	Perc.Enj.	P.I.V.I	Soc. Int.	S. Norms	Vic. Ach.
Aesthetics	<b>0.819</b>												
Attitude Towards Using	0.316	<b>0.817</b>											
Critical Mass	0.229	0.178	<b>0.825</b>										
Customer Loyalty	0.319	0.664	0.196	<b>0.836</b>									
Escapism	0.234	0.140	0.035	0.122	<b>0.780</b>								
Knowledge Acquisition	0.317	0.217	0.064	0.266	0.137	<b>0.870</b>							
Novelty	0.310	0.272	0.164	0.251	0.280	0.259	<b>0.875</b>						
Perceived Ease of Use	0.193	0.295	0.175	0.205	0.094	0.166	0.213	<b>0.717</b>					
Perceived Enjoyment	0.314	0.702	0.152	0.594	0.096	0.263	0.197	0.260	<b>0.808</b>				
Purchase Intention of Virtual Items	0.245	0.205	0.281	0.219	0.119	0.068	0.090	0.153	0.197	<b>0.843</b>			
Social Interaction	0.338	0.131	0.258	0.197	0.183	0.217	0.333	0.186	0.123	0.160	<b>0.842</b>		
Subjective Norms	0.281	0.233	0.536	0.255	0.108	0.114	0.215	0.220	0.250	0.233	0.279	<b>0.863</b>	
Vicarious Achievement	0.312	0.187	0.195	0.162	0.245	0.154	0.309	0.140	0.125	0.165	0.215	0.130	<b>0.862</b>

### Annex I – Discriminant validity – Heterotrait-Monotrait Ratio (HTMT)

<b>HTMT</b>	Aesthetics	Attitude	Crit. Mass	Cus. Loy	Escapism	Know. Acc	Novelty	P.E.O.U	Perc.Enj.	P.I.V.I	Soc. Int.	S. Norms	Vic. Ach.
Aesthetics													
Attitude Towards Using	0.425												
Critical Mass	0.298	0.242											
Customer Loyalty	0.416	0.847	0.253										
Escapism	0.326	0.184	0.056	0.164									
Knowledge Acquisition	0.399	0.270	0.096	0.325	0.194								
Novelty	0.390	0.346	0.202	0.301	0.362	0.304							
Perceived Ease of Use	0.193	0.339	0.251	0.213	0.101	0.183	0.207						
Perceived Enjoyment	0.426	0.916	0.223	0.759	0.122	0.343	0.252	0.279					
Purchase Intention of Virtual Items	0.288	0.240	0.340	0.245	0.161	0.084	0.095	0.214	0.246				
Social Interaction	0.442	0.166	0.344	0.239	0.252	0.266	0.391	0.211	0.151	0.202			
Subjective Norms	0.360	0.301	0.660	0.320	0.123	0.139	0.258	0.316	0.335	0.263	0.339		
Vicarious Achievement	0.395	0.241	0.246	0.197	0.337	0.179	0.374	0.147	0.161	0.194	0.269	0.169	

**Annex J – Discriminant validity – Cross Loadings**

Cross Loadings	Aesthetic s	Attitude	Crit. Mass	Cus. Loy	Escapis m	Know. Acq.	Novelty	P.E. O.U	Perc. Enj.	P.I.V.I	Soc. Int.	Subj. Norms	Vic. Ach.
ATT1	0.239	<b>0.815</b>	0.217	0.512	0.104	0.191	0.271	0.288	0.521	0.209	0.169	0.263	0.234
ATT2	0.293	<b>0.784</b>	0.156	0.498	0.166	0.155	0.239	0.256	0.557	0.155	0.076	0.185	0.139
ATT3	0.245	<b>0.851</b>	0.077	0.611	0.079	0.185	0.167	0.189	0.636	0.143	0.081	0.133	0.096
CL4	0.217	0.628	0.121	<b>0.820</b>	0.080	0.206	0.212	0.183	0.572	0.214	0.182	0.179	0.129
CL5	0.302	0.513	0.124	<b>0.841</b>	0.093	0.229	0.185	0.150	0.444	0.106	0.116	0.150	0.141
CL6	0.293	0.503	0.253	<b>0.846</b>	0.137	0.235	0.229	0.175	0.452	0.217	0.189	0.314	0.136
CM1	0.203	0.141	<b>0.845</b>	0.147	0.018	0.063	0.112	0.163	0.162	0.299	0.225	0.417	0.142
CM2	0.151	0.163	<b>0.848</b>	0.159	0.010	-0.010	0.143	0.124	0.100	0.204	0.263	0.390	0.161
CM3	0.205	0.137	<b>0.780</b>	0.175	0.055	0.094	0.147	0.145	0.114	0.195	0.159	0.501	0.175
MSSC_A1	<b>0.870</b>	0.269	0.221	0.317	0.193	0.284	0.276	0.154	0.277	0.233	0.295	0.224	0.248
MSSC_A2	<b>0.854</b>	0.233	0.163	0.259	0.193	0.241	0.271	0.173	0.267	0.205	0.289	0.237	0.285
MSSC_A3	<b>0.726</b>	0.279	0.178	0.198	0.191	0.256	0.210	0.148	0.225	0.157	0.246	0.233	0.233
MSSC_E1	0.206	0.073	0.040	0.097	<b>0.788</b>	0.106	0.233	0.086	0.071	0.166	0.157	0.080	0.232
MSSC_E2	0.182	0.088	0.023	0.090	<b>0.760</b>	0.180	0.213	0.027	0.049	0.092	0.170	0.017	0.222
MSSC_E3	0.166	0.149	0.020	0.097	<b>0.792</b>	0.070	0.212	0.090	0.092	0.037	0.119	0.125	0.144
MSSC_KA1	0.244	0.161	0.081	0.194	0.072	<b>0.845</b>	0.198	0.099	0.205	0.040	0.202	0.117	0.088
MSSC_KA2	0.255	0.201	0.026	0.253	0.104	<b>0.901</b>	0.229	0.158	0.255	0.076	0.165	0.078	0.162
MSSC_KA3	0.326	0.199	0.068	0.241	0.175	<b>0.863</b>	0.244	0.169	0.222	0.057	0.205	0.109	0.143
MSSC_N1	0.280	0.183	0.147	0.207	0.215	0.250	<b>0.854</b>	0.178	0.164	0.057	0.255	0.234	0.231
MSSC_N2	0.255	0.261	0.146	0.270	0.265	0.232	<b>0.911</b>	0.194	0.195	0.103	0.338	0.180	0.296
MSSC_N3	0.285	0.269	0.138	0.172	0.253	0.196	<b>0.858</b>	0.186	0.155	0.071	0.274	0.151	0.281
MSSC_SI1	0.280	0.123	0.177	0.197	0.168	0.190	0.315	0.155	0.130	0.097	<b>0.906</b>	0.248	0.177
MSSC_SI2	0.308	0.082	0.220	0.155	0.148	0.169	0.231	0.122	0.068	0.190	<b>0.793</b>	0.218	0.164
MSSC_SI3	0.286	0.117	0.276	0.138	0.146	0.189	0.281	0.188	0.096	0.152	<b>0.823</b>	0.239	0.207
MSSC_VA1	0.280	0.197	0.147	0.132	0.179	0.101	0.237	0.152	0.108	0.145	0.186	0.081	<b>0.864</b>
MSSC_VA2	0.268	0.146	0.163	0.159	0.217	0.161	0.257	0.125	0.124	0.118	0.169	0.087	<b>0.885</b>
MSSC_VA3	0.260	0.139	0.204	0.121	0.246	0.134	0.320	0.077	0.085	0.178	0.212	0.192	<b>0.836</b>
PE1	0.263	0.381	0.233	0.369	0.050	0.266	0.174	0.240	<b>0.718</b>	0.207	0.081	0.266	0.117
PE2	0.251	0.689	0.048	0.520	0.101	0.189	0.160	0.228	<b>0.865</b>	0.103	0.081	0.129	0.078
PE3	0.257	0.589	0.126	0.533	0.073	0.203	0.152	0.174	<b>0.835</b>	0.188	0.135	0.238	0.116
PEOU1	0.019	0.080	0.139	0.019	0.018	-0.036	0.040	<b>0.605</b>	0.028	0.199	0.116	0.209	0.055
PEOU2	0.052	0.133	0.129	0.043	0.014	0.078	0.046	<b>0.634</b>	0.072	0.071	0.034	0.153	0.040
PEOU4	0.228	0.312	0.137	0.248	0.114	0.198	0.251	<b>0.880</b>	0.307	0.115	0.198	0.166	0.153
PIV1	0.218	0.154	0.223	0.175	0.129	0.102	0.058	0.090	0.193	<b>0.864</b>	0.087	0.187	0.142
PIV2	0.221	0.235	0.229	0.237	0.073	0.063	0.121	0.215	0.195	<b>0.821</b>	0.171	0.237	0.145
PIV3	0.224	0.226	0.261	0.172	0.098	0.070	0.084	0.162	0.185	<b>0.856</b>	0.134	0.169	0.159
PIV4	0.206	0.092	0.239	0.172	0.103	0.049	0.078	0.032	0.111	<b>0.848</b>	0.113	0.172	0.116
PIV5	0.142	0.119	0.234	0.134	0.108	-0.019	0.002	0.112	0.125	<b>0.825</b>	0.161	0.203	0.127
SN1	0.267	0.219	0.423	0.275	0.083	0.114	0.203	0.135	0.233	0.183	0.245	<b>0.872</b>	0.146
SN2	0.251	0.176	0.471	0.198	0.103	0.059	0.181	0.186	0.192	0.176	0.197	<b>0.854</b>	0.110
SN3	0.213	0.208	0.488	0.194	0.092	0.123	0.175	0.240	0.223	0.239	0.277	<b>0.863</b>	0.086

**Annex K - Outer variance inflation factor (VIF)**

Construct	Item	VIF	Construct	Item	VIF
Knowledge Acquisition	MSSC_KA1	1.981	Critical Mass	CM1	2.107
	MSSC_KA2	2.205		CM2	2.142
	MSSC_KA3	1.858		CM3	1.268
Vicarious Achievement	MSSC_VA1	1.896	Subjective Norms	SN1	2.116
	MSSC_VA2	1.874		SN2	1.861
	MSSC_VA3	1.925		SN3	1.798
Aesthetics	MSSC_A1	1.839	Perceived Ease Of Use	PEOU1	1.693
	MSSC_A2	1.789		PEOU2	1.683
	MSSC_A3	1.29		PEOU4	1.072
Escapism	MSSC_E1	1.671	Perceived Enjoyment	PE1	1.323
	MSSC_E2	1.721		PE2	1.625
	MSSC_E3	1.163		PE3	1.549
Social Interaction	MSSC_SI1	1.876	Attitude Towards Using	ATT1	1.565
	MSSC_SI2	1.74		ATT2	1.408
	MSSC_SI3	1.605		ATT3	1.6
Novelty	MSSC_N1	1.901	Customer Loyalty	CL4	1.389
	MSSC_N2	2.363		CL5	1.993
	MSSC_N3	2.036		CL6	1.983
Purchase Intention of Virtual Items	PIV11	2.882			
	PIV12	1.912			
	PIV13	2.52			
	PIV14	2.935			
	PIV15	2.554			