Impact of COVID-19 on the consumption of video games and Esports

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Resum:

El sector dels videojocs i dels eSports són dues indústries que han portat un creixement molt ràpid en els últims anys gràcies, en part, a les noves tecnologies, i que també s'han vist afectades per la pandèmia de COVID-19 durant l'últim any. En aquest treball es vol veure quin ha estat l'impacte del COVID-19 en aquestes dues indústries, però des del punt de vista dels hàbits dels consumidors. Així, basat en un treball previ de Dopamine Alliance (una entitat dedicada a la investigació sobre qüestions ètiques en videojocs), es vol veure quin ha sigut el comportament de la comunitat "gamer" catalana durant les restriccions, A més, se sap que el consum audiovisual de continguts sobre videojocs i eSports ha crescut en l'últim any, però quin perfil de jugador ha incrementat més les hores dedicades als vídeojocs i als eSports. Segueixen els catalans la mateixa tendència que en l'estudi previ?

Resumen:

El sector de los videojuegos y los esports son dos industrias que han llevado un crecimiento muy rápido en los últimos años gracias, en parte, a las nuevas tecnologías, y que también se han visto afectadas por la pandemia del COVID-19 durante el último año. En este trabajo se quiere ver cuál ha sido el impacto del COVID-19 en estas dos industrias, pero desde el punto de vista de los hábitos de los consumidores. Así, basado en un trabajo previo de Dopamine Alliance (una entidad dedicada a la investigación sobre cuestiones éticas en videojuegos), se quiere ver cuál ha sido el comportamiento de la comunidad "gamer" catalana durante las restricciones, Además, se sabe que el consumo audiovisual de contenidos sobre videojuegos y esports ha crecido en el último año, pero ¿qué perfil de jugador ha incrementado más las horas dedicadas a los videojuegos y los esports? ¿Siguen los catalanes la misma tendencia que en el estudio previo?

Abstract:

The video game and eSports sector are two industries that have brought very rapid growth in recent years thanks, in part, to new technologies, and which have also been affected by the COVID-19 pandemic during the last year. This paper seeks to see the

impact of COVID-19 on these two industries, but from the point of view of consumer habits. Thus, based on previous work by the Dopamine Alliance (an entity dedicated to research on ethical issues in video games), we want to see which has been the behaviour of the Catalan "gamer" community during the restrictions, In addition, it is known that the audio visual consumption of video game and eSports content has grown in the last year, but which player profile has increased the hours spent on video games and eSports? Do Catalans follow the same trend as in the previous study?

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1. Motivation and relevance of the topic

Technology has been evolving since the beginning of Humanity, but from the last century new discoveries and improvements have changed the way of living for most citizens in the world. While a lot of these changes have been related to working efficiency, communication and transport, it can be noticed that a new way of entertainment has been created: video games.

Video games have been negatively perceived by many people during a lot of years, and it still happens nowadays. Even though, it's an industry that earned 120.1 billion USA dollars in 2019 (Venture Beat, 2020), and it is increasing popularly and economically year after year.

It is not surprising that few years after the creation of videogames some players started to make competitions among them. Esports arrived from the evolution of these competitions. Esports are defined as organized competitions of video games, also called "e-sports" (Garcia Villar & Murillo, 2018).Terminology when talking about esports is not clear. There is controversy between few words "esport", "e-sport", "electronic sport" and "eSport". In this thesis, as it could be noticed in the previous paragraphs "esport" is the chosen terminology for this phenomenon, as it is the most common used in English literature for this topic (Chaloner, 2020). Therefore, being "esport" the correct terminology for English doesn't mean it's the correct terminology for the rest of languages, for example, in Catalan the most common expression is "eSport".

Esports is an industry with earnings exceeding 1 billion dollars in 2019 (Ayles, 2019), with a market size valued on $1.1 billion in the end of 2019. Nevertheless this phenomenon seems to be hidden to a big part of the society though these esports had 443 million of viewers during 2019 (EFE, 2020). The development of this industry is different in every country depending on the importance that the country gives to it. For instance Asia and North America award a lot of importance to this relatively new industry, and in Europe the country that is leading the industry in terms of monitoring is Spain, according to the data of a study carried out by European group of video game developers (ISFE) and the German association Game, based on 12,000 interviews with inhabitants of eight European countries: Spain, Germany, Italy, The Netherlands, Switzerland Belgium, Hungary and Czech Republic (EFE, 2020).

This topic is interesting to be studied as it is an industry that is increasing its market size with new followers and viewers year after year. The speed of this rise is so surprising that esports fight to be recognized as sports disciplines (Kim, Nauright, & Suveatwatanakul, 2020), what becomes a problem since the different competition events on esports have not agreed common rules for them.

Besides, I would like to present my personal motivations for this research. As the video game player that I am, I have been following this trend during the last few years. Being one of those followers of the industry I dare to say that it is amazing to see how it is increasing, not only in terms of size but also in how the community is evolving. It is expected that one day esports will have a bigger community than the traditional sports, and this expectation increased in the moment that the International Olympic Committee (IOC) started studying the introduction of esports for the Paris Olympic Games 2024 (Kim, Nauright, & Suveatwatanakul, 2020). Now with COVID-19 this opportunity for the introduction of esports in the Paris Olympic Games 2024 seems to have vanished, but, instead, the number of esports viewers for 2021 is said to be higher than estimated (Kim, Nauright, & Suveatwatanakul, 2020).

To sum up, this topic is relevant for the studies in Business Administration as it is an industry that is growing year after year, and with the speed on improvements in technology, one may guess that the peak of its influence and economical potential is far from being reached still.

2. Theoretical framework

In the theoretical framework the necessary basis to understand what video games and esports are is going to be exposed mean nowadays for the society. It is mainly divided in three sections, the first one devoted to the technological matters, the second one to the institutional development of esports and the third one to the industry of video games. Then n another section the impact of the COVID-19 in the in the industry is explored, to finish in the last section with the conclusions of the theoretical framework.

2.1. Technological development

It makes no sense to start talking about esports without explaining the history of video games. In 1948 Alan Turing created the first video game device "Cathode Ray Tube

Amusement Device" but it was never commercialized (Anderson, 1983). After this, Turing and a team developed a program that was able to make simple chess moves (Lavington, 1980).

Although the first video games were commercially launched in the 70s, "Spacewar!", in 1962 is considered to be the first video game; it was not very popular, but it had a lot of repercussion and many future video games got inspired in it (Graetz, 1981). "Computer Space", which got inspiration from "Spacewar!", was the first commercial arcade game in 1971, and one year later, "Magnavox Odyssey" was launched, being the first home gaming console (Emirhan, Res, Sedat, & Sevki , 2018).

On October19[th]of 1972 the first video game competition was held in Stanford University for the game "Spacewar!". In this first competition, players were competing to each other via the best high score they could get, and the prize for the winner was a year subscription to the "Rolling Stone" magazine (Good, 2012).In 1980 there was the largest video game competition of the beginning of video games stage held by Atari, which attracted more than 10.000 players from the United States to compete in "Space Invaders" via high score (Levrel, 2020).During the early 80s there were some esports events on TV, being "Starcade" the most important one, celebrated on the South Korean TV from 1982 to 1984 with 133 chapters (Plunkett, 2011).In 1993, the "Wired Magazine" declared "Netrek" as "the first online sports game". This game had been created in 1988 and it was innovative as it was possible to play it with up to 16 players at the same time (Kelly, 1993). The fact of creating servers that could allow that amount of players to play in the same time started a new trend and a new experience on how to play and enjoy video games which is closer to what the video game experience nowadays.

In 1991 a new game mode was born with "Street Fighter 2" were 2 players were able to play together using the same console and this made face to face tournaments become more popular as players left the competition via high score behind and started to compete face to face in order to win (Patterson, 2011). "Street Fighter" is one of the most popular and emblematic games of all times and it still is. Later, in 1996, a 40-player "Street Fighter 2" tournament was disputed in California hosted by the Evolution Championship Series (EVO) sports tournament. In 2009, the tournament achieved 1000 players (Levrel, 2020).During the 90's there were some video games which were fundamental for the evolution of the industry as well as to define some genres of video

games and for the evolution of the competitions, the esports. One of those video games was "Warcraft" in 1994 by Blizzard entertainment, one of the biggest video game companies. "Warcraft" was defined as a real time strategy (RTS) game, and its competitions had one of the biggest prizes in the 90s (Levrel, 2020). Years later, in 2004, "Warcraft" evolved to "World of Warcraft" allowing players to play the game online, being defined as a Massive Multiplayer Online Role-Playing Game (MMORPG), and at the moment it continues being one of the most consumed video games. "Counter-Strike" in 1999 was a First-Person Shooter (FPS) in teams of 5 versus 5 (Levrel, 2020). "Counter-Strike" evolved to "Counter-Strike: Global Offensive", which was launched in 2012 and became one of the video games with the biggest prize pools in the competition, and it is still on at the present (JD Sports, 2019). Cyberathlete Professional League (CPL), being the first league for video games competitions, was founded in 1997. Warcraft and Counter Strike were represented by CPL which helped to popularize the video games and its competitions and it is currently the biggest esports league in the world (Yang, 2018). This was the first association that gave video games a standard institutional structure.

2.2. Institutional development

2.2.1. International recognition and first associations

The government of South Korea was the first one in the world to be involved with esports. It was in 2000 when the Minister of Culture, Sports and Tourism focused on esports to promote them and also to regulate them, and to this end they created the Korean Esports Association, KeSPA (Yang, 2018). With the new regulations and laws they granted to esports players a minimum salary and protected them with minimum length contracts (Levrel, 2020). These measures were the strong points to make esports an important part of their culture and economy and also to be recognised as the country with the best esports athletes.

South Korea not only had the importance for being the first country to know how to take advantage of the industry, but they also played a really important role with the creation of KeSPA as it became the main influencer for others. Furthermore, at the beginning of the release of the video game "StarCraft", the only competitions were played in South Korea and it was impossible for players from other countries to beat the skills of south Korean players (Yang, 2018). Behind the huge skills of the South Korean players it

must be taken into account that they had good contract conditions to be esports competitors, and the other players didn't have the support from their governments yet. At that moment, seeing the result in competitions and the technological and economic progress of the country, South Korea become a model for other countries and other governments started to invest and focus on esports (Levrel, 2020).

Esports had a problem with the regulations as there were not any official rules, so in every event and in every tournament the rules were different. This changed in 2008, when the International Esports Federation (IESF) was created (Emirhan, Res, Sedat, & Sevki , 2018). The organization started with nine esports associations from Germany, Denmark, The Netherlands, Austria, Belgium, Switzerland, Taiwan, Vietnam and South Korea, where it is based; from then there has been a continuous increment in the number of supporter countries up to98 countries from all around the world (IESF, 2020).

2.2.2. Esports recognition as sports

There is not a clear method for defining esports as sports, in the same way that it happens with other disciplines (for example chess, that will be exposed below). Esports have been in the point of discussion during years for legitimizing them as sport. According to Guttman(Jonasson & Thiborg, 2010), there are seven distinguished characteristics for modern sports, used by him to identify and describe sports:

- Secularization.
- Equality.
- Specialization.
- Bureaucratization.
- Rationalization.
- Quantifications.
- Obsession with the quest of records.

In order to be considered sport according Guttman, esports must meet all seven characteristics. The only one that can be discussed is bureaucratization as is not built at all in esports (Jonasson & Thiborg, 2010)

As it has been said in the introduction, there is a lot of controversies for considering esports as sports. There are some organizations and institutions that promote esports for being considered sports while others don't agree with that.

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This controversy may be compared with the case of chess, that after a lot of years of discussions was finally considered a sports activity in 1999 by the IOC, in the "mental games" category (DrSport, 2018). Supporters of chess being considered a sport argued that chess players had an intensive training as well as football or basketball professionals had and the effort, mental in this case, for anticipating the possible moves that the opponent could make (DrSport, 2018).

In 2018, chess was in the point of view for entering to the Olympic games in 2024, but in the end, one year later, the IOC refused its candidature, while candidatures for popular sports for young people continues its process for being in the Olympics, as skateboarding, breakdance or sport climbing (Muñoz, 2019).

Recently, at a summit in 2017 in Switzerland, the IOC recognised that "Competitive esports could be considered as a sporting activity, and the players involved prepare and train with an intensity which may be comparable to athletes in traditional sports." (Townley, 2018).

Esports are showing strong growth, especially among young people from different countries, and can provide a platform compatible with the Olympic movement (Ayora, 2019).In order to be recognized as sport by the IOC, esports content must not violate Olympic values (Ayora, 2019). But the Olympic committee stands reluctant on how is the current gamming community environment, as it does not respect one of the fundamental values of the IOC, "respect for everyone" (GomeWars, 2018). Greater recognition by the IOC implies the existence of an organization that ensure that the rules of the Olympic Movement are followed, as anti-doping, betting, cheating, etc. (Levrel, 2020).

Sports video games as "FIFA", "PES" or "NBA 2K" could fall within the requirements by not violating the Olympic values. Any video game that has certain violence would not be considered an Olympic sport. Hence, video games as "League of Legends", "Counter Strike", "Fortnite", etc. would not have the requirements even being some of the most popular ones (Townley, 2018).

2.3. Industry

2.3.1. Business model in video games

Not all video games follow the same business model, there are two big categories in which video games can be classified: paying games and free to play games. In this section it is going to be described the two main business model of some of the most popular video games in the esports sector: paying games and free to play.

Paying games

Paying video games is considered the classic business model of video game industry. As the name says, paying video games are the ones that the player has to pay in order to get the content of the video game. This was the main and nearly only business model during the last century (Levrel, 2020).

Paying games normally don't receive changes in the game, which means that in the moment of purchase the costumer is getting the full content of the game, so it is assumed that the game will not require updates to continue with the experience of the game. But sometimes this kind of games offer downloadable content, known as DLC, as another way to give more period of life to the game, so players will receive something new in the game to play, but they will have to pay to get this extra content.

In this business model, titles of games as "FIFA 21", "Call of Duty: Black Ops 4", "StarCraft II" or "Counter Strike: Global Offensive" can be found.

Free to play games

The concept of the earnings in a free to play video game is a little bit more complex than the paying game. In a free to play game the player has access to the full content of the game as well happens with paying game. In this case the earnings come from a the "voluntary" purchases of the player. There are two main different methods for earning money in free to play games:

- Microtransactions: It is the most popular way of earnings in free to play video games. It consists on players buying optional things inside of the game, those things can be optional content as skins, boosters to advance faster in the game or additional content as a DLC. This tool used by the editors of the game, helps them to earn more income depending on the number of players paying for this. In Smartphones it is very common to see free to play games that uses the

microtransactions system, with an average price of 1€ to 5€ in most of the transactions (Bardwell, 2019). In this way, the player does not feel that is going to spend a lot of money and leads him/her to buy in the in-game shop.

- Pay to win: A pay to win video game is a free game in which the player can play without difficulties but, in general, arrives a point where the player cannot continue with the experience because it converts too difficult that they need to buy upgrades, items or whatever it is necessary in the in-game shop with real money in order to continue with the experience. It is remarkable that the competitions of this kind of video games cannot be considered esports, as the conditions to get the full content of the game are not fair for player (ComputerHoy, 2014).Furthermore, there is a little bit a controversial among players while discussing if one game is a pay to win or not. As there are players that considers that if people can buy in the game to advance faster would mean that the game is a pay to win, but it is not (Levrel, 2020).

An example of a famous free to play videogame is "Fortnite Battle Royale", other popular free to play video games in esports are: "League of Legends", "Dota 2", "Hearthstone", "Fortnite" and "Clash Royale" among others.

2.3.2. Segmentation in video games

There are different segments in video games. The most popular is Smartphone games with a 40% of market share. In this last 2020 Smartphone video games increased their revenue by 15,8% achieving 63,6 billion dollars (Figure 4). This is the most popular device as it is accessible to the huge majority of the population in developed countries, so people don't need to make a special investment in money to play and, as most of the games are free-to-play, it is easy to try different games until finding the perfect one. Most of these revenues come from little purchases inside the game to make the experience of playing better (Levrel, 2020).

In the second place of market share, there are the gaming consoles with a 28% of market share, as PlayStation 5, Xbox Series X and Nintendo Switch, and all the previous generations. The revenues from gaming consoles in 2020 has noticed an increase of 6,8% and earned a total of 45,7 billion dollars (Figure 4). Console games are not that easy to access as, first, a big investment is needed to get the console and then, other investment for every game the player wants to play.

With a market share of 21% and a total revenue of 33,9% there are the downloaded PC games, increasing their revenues by 6,7% from previous year (Figure 4). Downloaded PC games have a similar entry barrier than console games as, first, a big investment is needed for having a good PC able to play the present popular games. And then, other investments in order to play other games.

At last, there are browser PC games, losing earnings by 13,4% and having a total revenue of 3 billion dollars (Figure 4). Most of the browser PC games are switching to Smartphone games as its access is even better as mobile phone is with the user wherever he or she is.

Figure 1: Global Games Market 2020 (per segment).
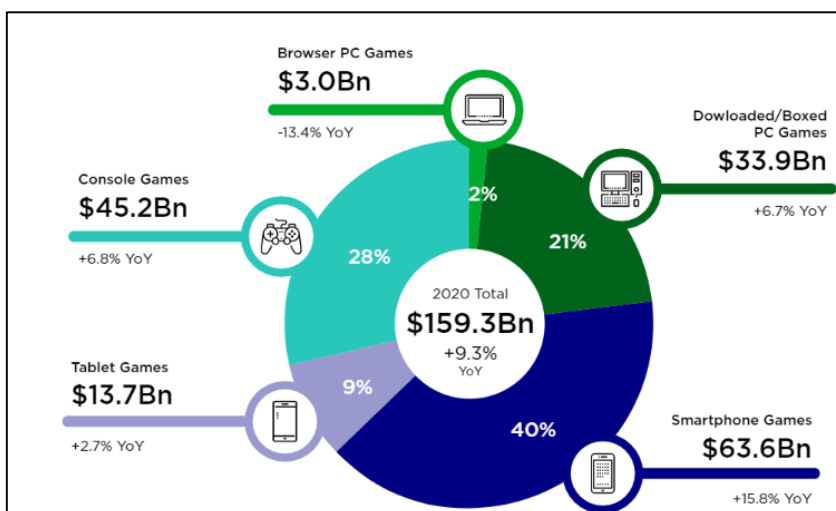
Source: (Newzoo, 2021)

2.3.3. Esports as an audiovisual industry

Esports industry, as it can be seen in the history of esports, is really new and it is continuously growing, trying to achieve the peak of popularization but it cannot still be known when the industry will achieve this peak. As it can be seen in Figure 1, during the last years the industry has grown in a violent way. During first quarter of 2020, the audience of esports has reached 459 million spectators, which has been increased in 52 million new spectators, this percentage of growth has maintained around 12% for the last two years.

*Figure 2:. Esports Audience Growth 2020 (from 2018-2020 and forecast for 2023).*
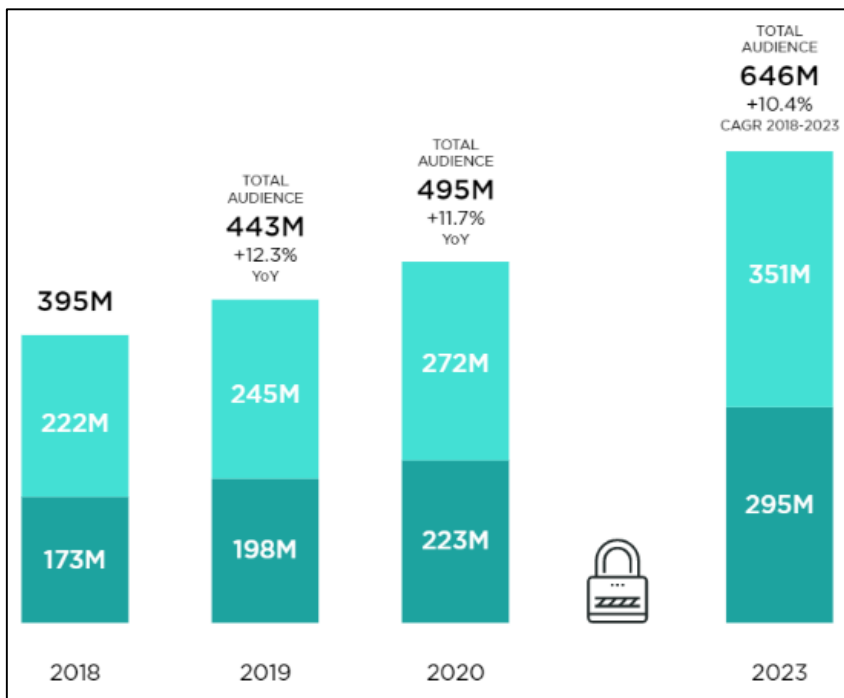
Source: (Newzoo, 2021)

In Figure 1,one may see the difference between esports "Enthusiasts", in dark green which is "people who watch professional esports content more than once a month" (Newzoo, 2021) and "Occasional viewers", in light green understood by "people who watch professional esports content less than once a month" (Newzoo, 2021). During 2019 and 2020 the percentage of occasional viewers has been around 55%. Looking at Figure 2, where it can be seen the esports audience growth in 2017 and its forecast for 2020, which was too optimistic, forecasting 96 million viewers, 19,39% more than what 2020 has actually had.

Audience is increasing in the esports industry, so do revenues. In fact, revenues have been increasing faster than audience. As it can be noticed in Figure 3, revenues in 2019 increased a 22,4% with respect to 2018 with an increase of nearly the half in audience (12,3%). In 2020 the revenues continued growing but in a slower way, increasing the revenues of the industry in 15,7%, achieving a total of One billion dollar, what implies an increase of 149,5 million dollars respect to the previous year (Newzoo, 2021).From all the revenues, a 57,89% comes from sponsorship, implying 636,9 million

*Figure 3: Esports audience 2020 (from 2015-2017 and forecast for 2020).*
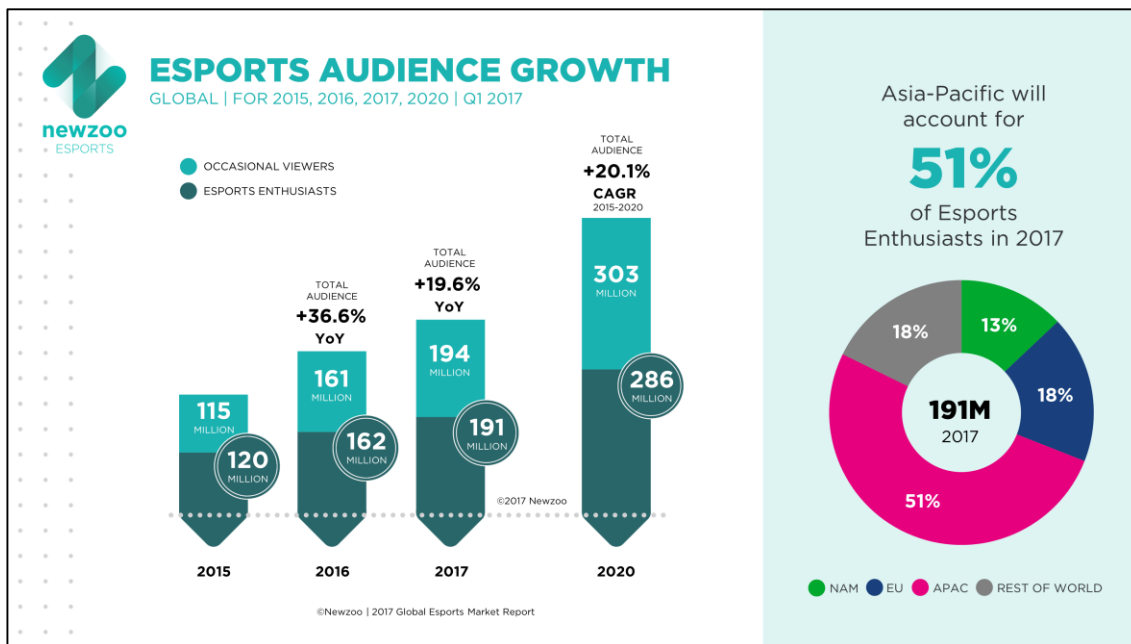
Source: (Newzoo, 2018)

dollars, an increase of 17,2% from 2019. In Newzoo's article, it specifies that in Figure 3, digital and streaming revenues, while these are the smallest, are also the ones with the highest increase in revenue, achieving a 60,9% in digital and a 33% in streaming revenue (Newzoo, 2021). This increase in streaming revenue can be related to the pandemic situation, as streaming platforms like Twitch have noticed a big increase in the concurrent viewers and hours watched (TwitchTracker, 2021).

In the Newzoo report, a forecast was made for 2023 with a total revenue of 1.556,7 million dollars to the esports industry, this means an increase of 14,9% of CAGR (compound annual growth rate) that is slightly bigger than the CAGR of audience which is forecasted for 10,4% in 2023. It is important to notice that these results are from the first quarter of 2020, so they do not include data from the pandemic restrictions which are expected to be result in a higher increase as well as has happened with the average spectators of Twitch, the most popular streaming platform for gamers.

Figure 4: Esports Revenue Growth (from 2018-2020 and forecast for 2023).
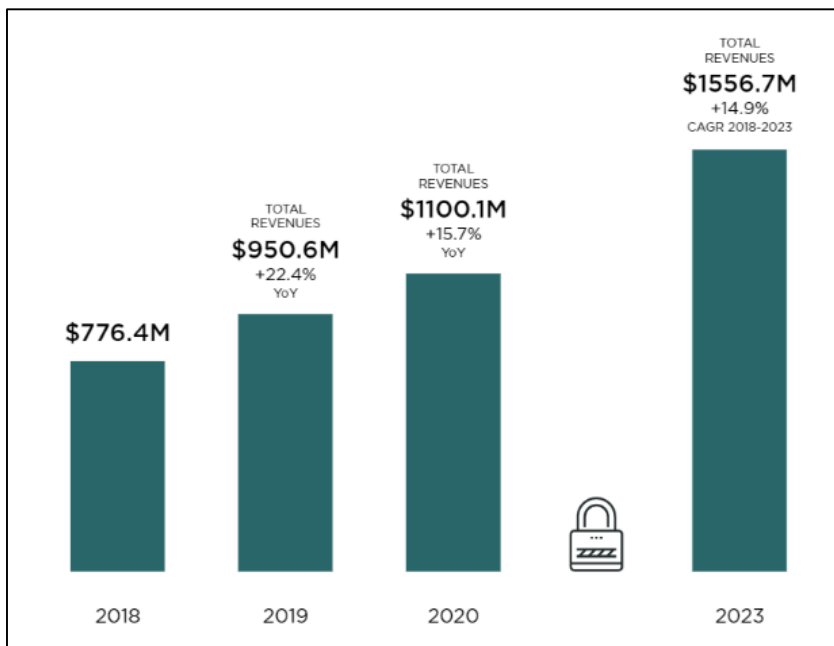
Source: (Newzoo, 2021)

2.3.4. Audio visual platforms

Audio visual platforms are the ones in charge of sharing esports with all the world, here it going to be explained the details of the two most popular audio visual platforms for gaming community: YouTube and Twitch.

YouTube

YouTube is an American video sharing website. It features a variety of movie clips, TV shows and music videos, as well as amateur content such as video blogs and video games.

Created on 2005 has been growing in popularity until it has achieved more than 2 Billion users by 2021 (YouTube About, 2021), and since 2018 is classified as the second most popular web site, just behind Google (Alexa, 2021).

On 2020 there were over 40 million gaming channels on YouTube and over 100 Billion hours of gaming content on the platform, being the year were gaming content has been the highest since YouTube was created (Wyatt, 2020). The top video games by hours watched were "Minecraft", "Roblox", "Garena Free Fire", "GTA V" and "Fortnite".

Furthermore, the top live games watched is the same but excluding "Roblox" and incorporating "PUBG Mobile in its place" (Wyatt, 2020).

Twitch

Thanks to video games industry esports were created and their popularisation increased rapidly. This happened as well with streaming sites, that are, virtual environments where people play videogames on stream while other people watch how they play. In this graphic from Twitch statistics (see Figure 5) it can be seen the evolution of the average viewers per month through the period September 2012 – May 2021 with a continuous rise of more than 3 million viewers. An interesting point to highlight is the growth observed by the end of the first term of 2020 were the average audience increase by more than 850.000 people. Moreover, it can be noticed that the average viewers per month has nearly been doubled from March 2020 until May 2021. This period coincides with the implementation of restrictions due to COVID 19 all around the world.

Figure 5: Twitch average viewers (2012-2021).
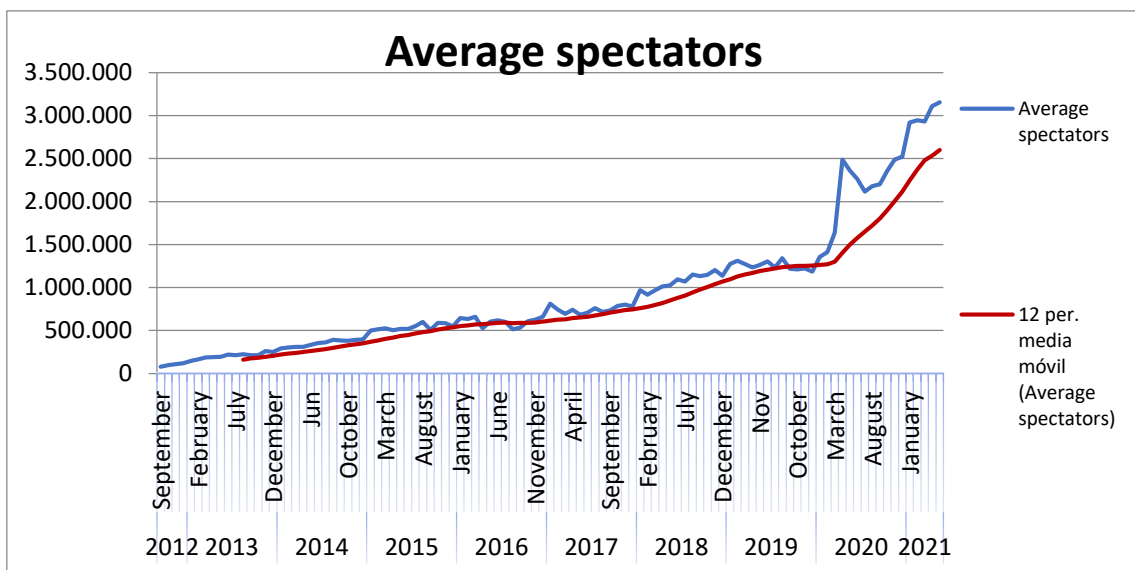
Source: (TwitchTracker, 2021)

2.4. Impact of COVID-19

2.4.1. Digital impact of COVID-19

The year 2020 it has been a very different one for the actual society. Fear, restrictions and uncertainty are probably the best words to describe it. COVID-19 and its restrictions have resulted in an increase in the acceleration of digitalization in companies all around the world. In average, they have increased the digitalization of processes and customer interactions by what it was expected to be in three to four years (Mckinsey, 2020). Pandemic situation has given more importance to digitalization and to the connection that new technologies give in order to maintain our social, professional and own live as normal as it can be while trying to maintain the economic live also (Real Instituto Elcano, 2021).

These circumstances have also been reflected in the changes in the use of media and new technologies of Spanish citizens from the beginning of the quarantine started on the 15th of March of 2020.The quarantine provoked a big increase in the consumption of television and streaming platforms. During the first week of lockdown, television had a 55,6% more audience during the day and a 25,6% in prime time than the same week in 2019 (Fieiras Ceide, Túñez López, & Vaz Álvarez, 2020). The impact of this increase was different depending on the age range for young people from 13 years old to 24 there was an increase of 80% while the increase in people older than 65 years old was 23%. The difference is due that younger generations are leaving traditional television to other platforms (Fieiras Ceide, Túñez López, & Vaz Álvarez, 2020).

Traditional television was not the only one to experiment and increase in audience. Subscription Video On Demand (SVOD) platforms had also an increase on demand, being HBO the one that experimented the highest increase in Spain, followed by Filmin, Movistar, Netflix and Amazon Prime (Casal, 2020). But the increase was also for not legal alternatives as Megadede which experimented an increase of the 70% (Smartme Analytics, 2020).

Traditional television and SVOD platforms were in the same trend with other platforms. During the first week the use of Smartphones increased a 38% with a use of 3 hours and 24 minutes per day (Smartme Analytics, 2020). The Smartphone Apps that experimented the biggest increase are the communication Apps and social networks. For example: WhatsApp had a 61% increase in the time used, Hangouts experimented a 63,2% increase, Twitter was the social network with the highest increase, 56,1% and

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Facebook use increased by 36,5% (Smartme Analytics, 2020). On the other side, Smartphone video games as "Clash of Clans" and "Parchís" also had a significant growth in use terms (Smartme Analytics, 2020).

A recent study (GlobalWebIndex, 2020), shows all this huge growth during the first week had later on a progressive decrease, but the tendency of people is to use more these services. The use of seeing streaming programs is what Spanish citizens think is going to be more usual in the future, 1 out of 10 says that people are going to continue using social networks and video games more than before the quarantine and 1 out of 7 is going to continue spending more time with communication apps as WhatsApp (Fieiras Ceide, Túñez López, & Vaz Álvarez, 2020).

2.4.2. Impact of COVID-19 in the industry of video games

Dopamine Alliance is defined in their website as "a research community aiming at the agile, innovative and continuous study of the interactions between video games, psychology and ethics" (Dopamine Alliance, 2020).

Their last public report was "Video Game Habits & COVID-19", and in this research report a survey was made to 161 persons from 25 different countries. The aim of the research was to see the changes in the behaviour of all the respondents regarding the habits in videogames while classifying them in which kind of player they were considered before COVID-19 arrived.

The results of this research showed:
- o An increase of hours played, mostly for competitive players.
- o Videogames were used for socializing with family and friends.
- o Mature gaming communities changed titles because of the increase of presence of immature teenagers in their games.
- o Competitive players slept less than before.
- o Consumption of video game streaming and esports increased.

2.5. Conclusions of the theoretical framework

Once a complete review of the literature is done, thanks to the collection of literature review, it is time to take some conclusions.

With respect to video games, this new industry has grown and evolved, using new technologies every few years. The profits that the industry has are amazing and are growing year after year, adding new costumers to the market segment (Newzoo, 2021). Earnings from videogames come from two main different business model: paying videogames, being the ones that the player has to pay for getting the full content of the video game, and free to play videogames, which work with microtransactions or as a pay to win video game. Both business models get money in different ways and have videogames in the top leagues of esports (Levrel, 2020).

Focusing on esports, being the high-level competition of video games, this industry would not exist without them. Esports will always go a step behind video games as the esport will be created depending on the demand, popularisation and professionalization of players in a specific video game. The industry is also in continuous growth but the forecasts for the recent years were too optimistic for what it has really been. Even though, there is not yet any forecast predicting a decrease in the demand of esports (Newzoo, 2021). The pandemic situation has become an opportunity to let esports popularisation grow, this has been proven in streaming platforms, were the hours watched of streaming video games during this last year have experimented a huge increase with respect to the previous one, as is the case of Twitch (TwitchTracker, 2021).

Furthermore, having the IOC discussing the incorporation of esports in the Olympic Games, is a great recognition for both industries, as at the beginning nobody would have said that one day, video games would be recognised as sport and specially not that esports would be in the point of view of the IOC (Townley, 2018).There are still some things that video games and esports community have to polish to be considered Olympic, but they are in the good way of doing things to be recognised (GomeWars, 2018).

The effects of COVID-19 in Spain resulted in an increase of consumption in all kind of media and digital platforms. Young people, who are the ones that are stopping watching TV, increased its consumption an 80% during the first week of quarantine. In addition, the use of Smartphones experimented a big increase, with communication

Apps and social networks in the top of the use of Smartphones. Some Smartphone videogames also joined the trend of growth in usage (Fieiras Ceide, Túñez López, & Vaz Álvarez, 2020).

Thanks to the study of Dopamine Alliance, we have a global image of the change in behaviour for video game players during the quarantine, which showed, among others, an increase in hours played mostly for competitive players and an extraordinary use of videogames for socializing (Dopamine Alliance, 2020).A natural question comes naturally up from this study, that is to check if the changes in the consumption of video games and esports remains the same in any territory.

3. Goals and hypotheses of the work

The purpose of this work is to identify some features of the changes in the consumption of video games and esports provoked by COVID-19 among young people living in Catalonia. To this aim we next split this purpose in several goals, named (G), that will give birth to several hypotheses to guide the empirical work.

Before stating the first goal, we must highlight that this research is inspired by the survey done by Dopamine alliance (Toledo, 2020). As commented in section 2.4.2. this publication contains a study of the impact of COVID-19 pandemic among players of video games.

(G1) To identify if there has been a rise in the number of hours of consumption of video games. According to the data observed in the previous sections we can expect that there has been a rise in the time of the Catalan audience spent watching esports. Hence this goals are translated into the following hypotheses:

- o H1.1: *Catalan supporters have increased the number of hours that they dedicate to watch esports with respect to the pre-pandemic times.*
- o H1.2: *Teleworking/Distance learning people have increased more the hours spent watching esports.*

(G2) To define which kind of player (casual, achiever, explorer, socializer, beater, completionist) has been more influenced by video games during the pandemic, understanding as:

- Casual: player plays sometimes, doesn't get too caught up in the game.
- Achiever: the player likes to collect all the achievements.
- Explorer: the player enjoys exploring all the mechanics and most hidden places in the game.
- Socializer: the player plays with friends, while talking or meeting new people.
- Beater: the aim of the player is to overcome challenges and to get good scores.
- Completionist: mix of achiever and explorer.

This classification mainly coincides with the one proposed in the survey of Dopamine alliance (Toledo, 2020). The only new category here is "Casual" player. The addition of this new category is inspired by the classification used by the gamers community in specialized forums as "3D Juegos" (3D Juegos, 2013) and internet videos in Youtube or streams in Twitch to describe a specific player profile. Actually, this new category is not included in any of the previous categories (Toledo, 2020).

This goal gives birth to the following hypotheses:

- o H2.1: *Casual and social players have increased more the time spent in video games than achievers, explorers, beaters and completionists during this year.*
- o H2.2: *Casual and social players have spent more money in video games than achievers, explorers, beaters and completionists.*

As explorers and competitive players are the ones that have always invest more time playing video games, they are probably the ones that have not seen an additional increase in their investments in video games.

(G3) To identify which were the purposes of players to play during the pandemic situation. Video games may have been an alternative to meet with friends during the last year. Probably people that were not usual players, played video games just to spend time with them. In this sense we state the following hypothesis:

- o H3: *The main purpose of players was to connect with friends.*

(G4) To explore the profile of players that watch esports content in Twitch and Youtube. As explained above these two platforms are the most popular ones among esports supporters for audio visual content. We think there must be a relationship between the users of these platforms and the type of player. Moreover, players investing more money in videogames should be the ones using these platforms.

- o H4.1: *There is a relationship between the type of player and the fact that the player watches esports in Youtube or Twitch.*
- o H4.2: *The players that watch esports in Youtube or Twitch invest more money in video games than players that don't use these platforms.*

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4. Methodology

First of all, data collection through articles, reports and official sites were also implemented to complement and contrast the results of the survey and to identify the strong points for the success of esports industry, as we have presented in the theoretical framework.

Next, in order to achieve the goals specified in the previous section, this work required data which was collected during 2 months through an online survey limited geographically to the Catalan region and to the selected population target, that is, Catalonia residents from 15 years old to 40 years old. Afterwards quantitative methods were implemented to study the result and analyse it. The result of the work shows the importance that video games and esports have had during the COVID-19, and how the consumption of video games has changed after the lockdown in 2020.

The sample size required will be of 273 individuals. This result comes from taking into account a confidence level of 90%, as well as a 5% of margin error, with a 50% of population proportion from a total population of **(2.205.820,** which are the total habitants in Catalonia from 15 years old to 40 years old in **2020)** (IDESCAT, 2020)

5. Results

In this section an exploratory analysis of the data collected with the survey is first presented. Afterwards the data of the survey will be used to test the hypotheses of the work. The technical file of the survey is the following one:

SURVEY FOR VIDEO GAME AND ESPORTS HABITS BEFORE AND AFTER QUARANTINE

TECHNICAL FILE

Target population: Gamers from Catalan territory between 15 and 40 years' old

Sampling type: Snowball sampling by convenience.

Sample size: Forecasted (273). Performed (252). Used (210).

Margin Error: 5%

Confidence level: 90%

**Information collection period**: 9 April – 11 June

Form of information collection: Via previous contact

Made by: Arnau Torrent i Solà

5.1.   Exploratory analysis

Nearly 75,5% of the respondents are men while the other 24,5% of the answers are women, which means that there is a huge difference in the gender of gamers in Catalonia. When we take a look on the age, there is an average of 23 years old and a median of 22, being the first quartile 18 and the third one 25.

Figure 6: County (percentage)
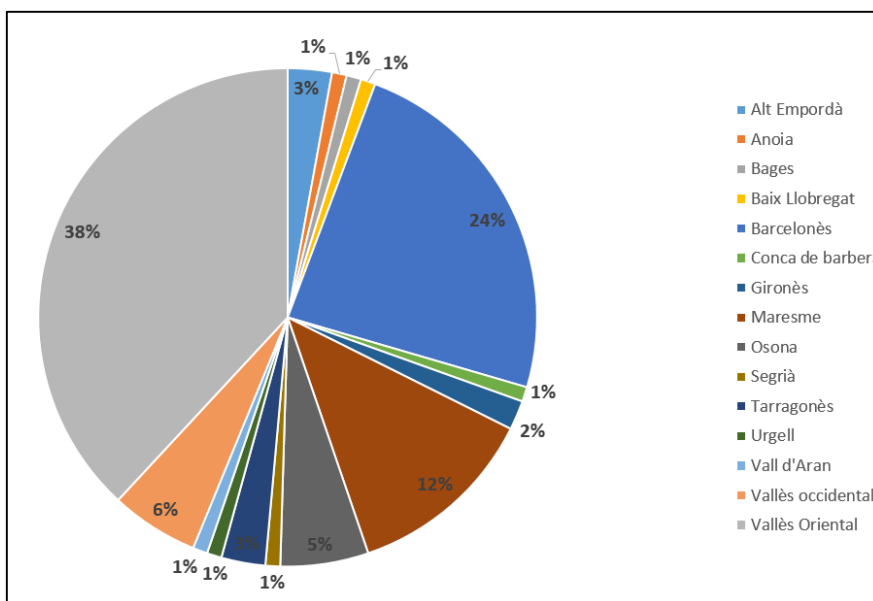
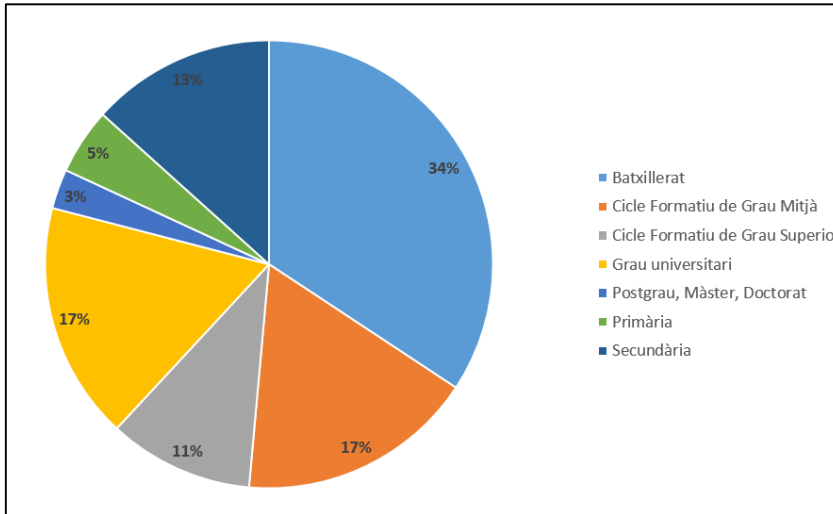Source: Own build with data from the survey

According to the geographical distribution we can say that the sample is not representative as more than 80% comes from Barcelona's province mostly from Vallès Oriental, Barcelona and Maresme (see Figure 6).

From the 210 answers, more than 50% have a level of studies pre-university, which makes sense with the average age that the profile of respondent has.

Figure 7: Level of studies (percentage)

Source: Own build with data from the survey

Furthermore, 65% of respondents are students while 37% are employed, nearly 7,5% are working for themselves while less than 3% are unemployed. From all those who are currently studying or working, a 60% of them are teleworking or distance studying at least once per week. From those, nearly 40% of them telework or distance study 5 days a week, 23% 4 days a week and nearly 19% 3 days per week.

Figure 8: Type of player (percentage)
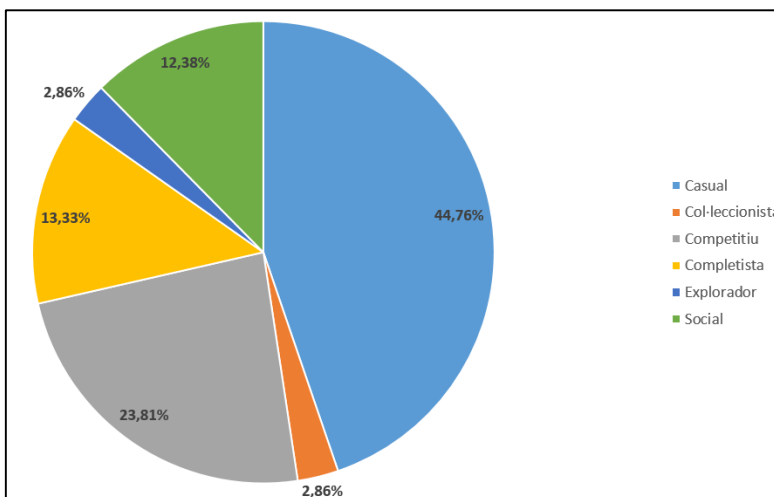
Source: Own build with data from the survey

From player perspective, most of players define themselves as casual players with nearly 45% of the answers, seeing this result has made sense to introduce this kind of player in the list as it has been the one more chosen followed by competitive with nearly the 24% (see Figure 8). When looking at the platform answers, it can be seen on

Figure 9 that there is a predominance of PC players with 59%, followed by a 49% of Smartphone players. On the third position of popularity there are the Play Station 4 or older generations of Play Station with a 29%.

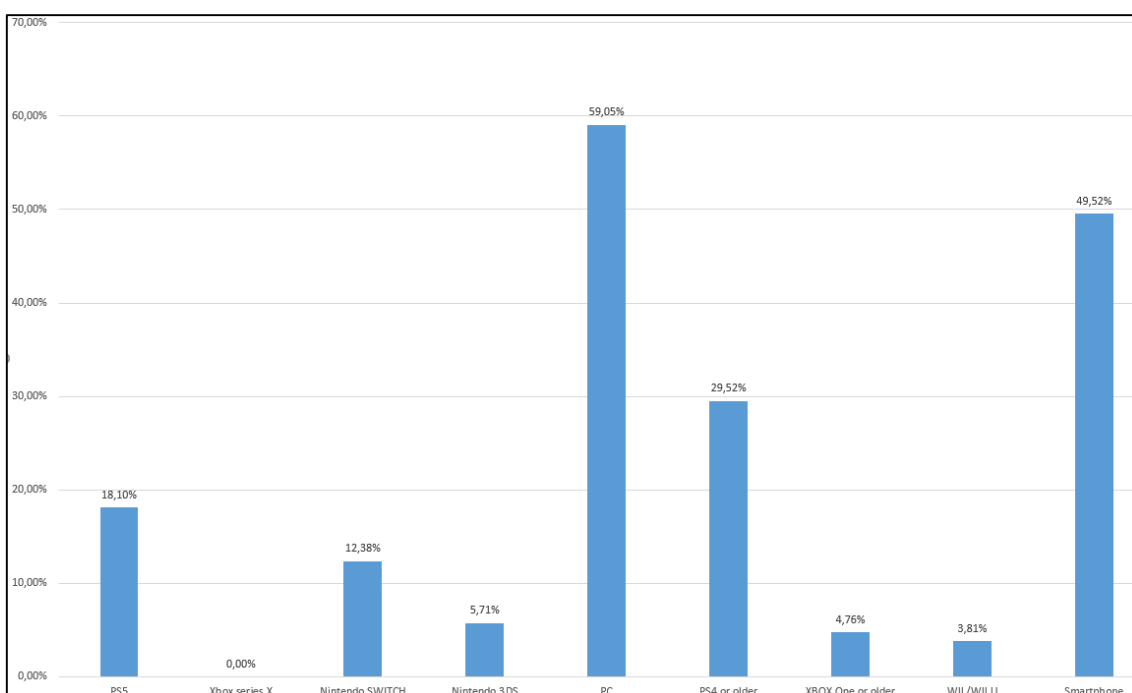*Figure 9: Platform used (percentage)*

Source: Own build with data from the survey

When talking about spending, the average price of the PCs that players have is 1090€, and the investment in videogames during this last year has been 160€ per player, these investments include titles of video games, purchases in the in-game shop and DLCs.

Once we know the platforms that the respondents play and their budgets, is time to see which video games they used to play before COVID-19 and which are they playing actually. On Figure 10, we can see that the most played game before and after COVID-19 has been GTA V and that all games have raised in popularity despite Hearthstone, Overwatch, Rainbow Six and FIFA. One of the reasons why there is a rise in the titles

of games played is that nearly 85% of the respondents affirm to have increased their time spent playing video games.

Figure 10: Video games played before and after COVID-19
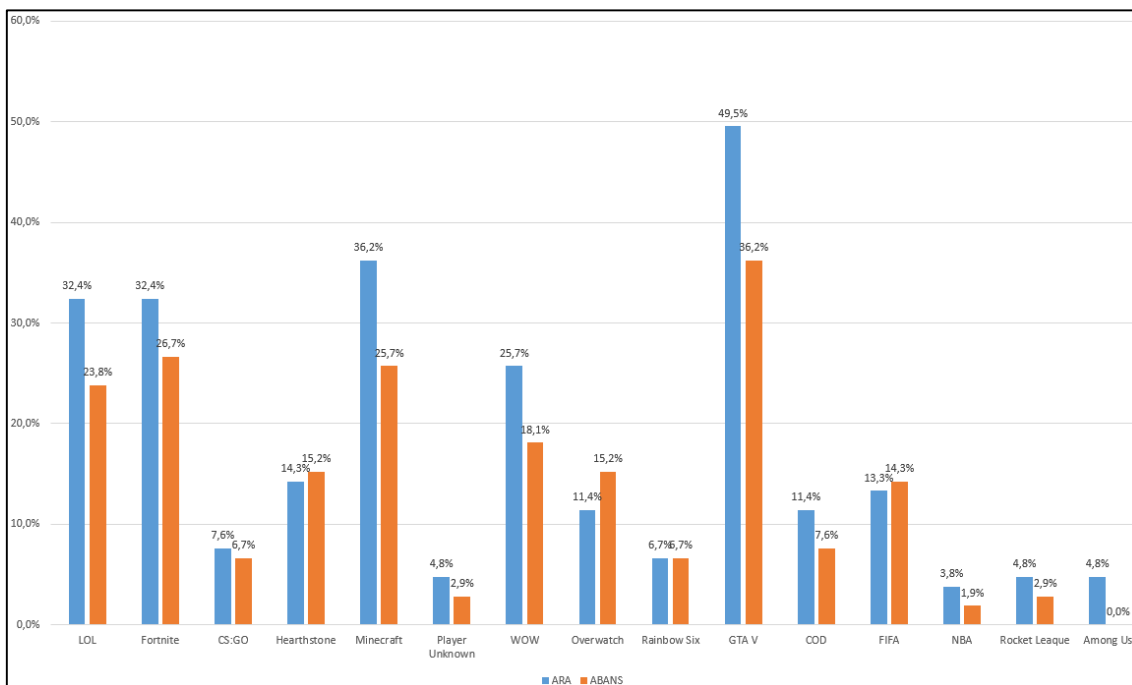
Source: Own build with data from the survey

After having the results, there were still some things to explore inside of the data, that is why we looked for the relation between the kind of player and if the player played free to play video games, paying video games or both. In Figure 11 it can be seen that casual players are the ones who play more proportion of free to play and paying videogames, but they play just one kind, while beaters, social and completionist have more share in playing both kinds of games.

On Figure 12, there is the crossing between gender and kind of video game it can be seen that women are playing in nearly equal proportion to free to play games, paying games or both, while nearly 73% of men play to both kind of videogames.

Figure 11: Two-way table of player type and type of game.

Cuenta de Q13.1.2_FREE&PAY	Etiquetas de columna			
Etiquetas de fila	both	free	pay	Total general
Casual	30,30%	81,25%	60,87%	44,76%
Col·leccionista	1,52%	0,00%	8,70%	2,86%
Competitiu	31,82%	6,25%	13,04%	23,81%
Completista	16,67%	0,00%	13,04%	13,33%
Explorador	4,55%	0,00%	0,00%	2,86%
Social	15,15%	12,50%	4,35%	12,38%
Total general	100,00%	100,00%	100,00%	100,00%

Source: Own build with data from the survey

Figure 12: Two-way table gender and type of game.

Cuenta de Q13.1.2_FREE&PAY	Etiquetas de columna			
Etiquetas de fila	both	free	pay	Total general
Dona	36,00%	32,00%	32,00%	100,00%
Home	72,73%	9,09%	18,18%	100,00%
Total general	63,73%	14,71%	21,57%	100,00%

Source: Own build with data from the survey

On the other side the crossing of gender and kind of player was also done. In Figure 13 it can be seen that women are more casual player than man, in fact, men are more competitive than women.

Figure 13: Two-way table gender and type of player.

Cuenta de Q12_TIPUS	Etiquetas de columna						
Etiquetas de fila	Casual	Col·leccionista	Competitiu	Completista	Explorador	Social	Total general
Dona	56,00%	0,00%	8,00%	20,00%	0,00%	16,00%	100,00%
Home	40,26%	2,60%	29,87%	11,69%	3,90%	11,69%	100,00%
Total general	44,12%	1,96%	24,51%	13,73%	2,94%	12,75%	100,00%

Source: Own build with data from the survey

At last, it has been seen that Twitch and YouTube are the favourite audio visual platforms for gamers, each one used by more than 50% of gamers while Mixer is nearly not used as well as Facebook live which is used by no one of the respondents (see Figure 14).

Figure 14: Audiovisual platform used (percentage).
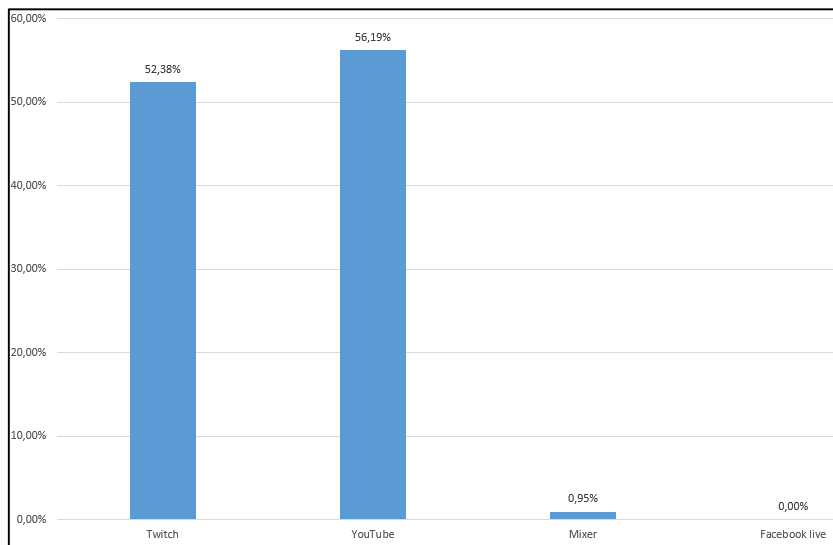
Source: Own build with data from the survey

When comparing people who watch esports on YouTube to people who does not, it can be noticed a difference in the kind of video games. As the ones who do not watch YouTube are well dispersed between the three types, but being the ones who play both types (free to play and paying video games) the most common with a 41%. On the other hand, the relation between gamers who watch YouTube and the kind of video games played is more unequal as nearly 80% of them are playing both kind of video games (see Figure 15).

Figure 15: YouTube viewers and type of video game.

Count of Q13.1.2_FREE&PAY	Column Labels			
Row Labels	both	free	pay	**Grand Total**
0	41,30%	23,91%	34,78%	100,00%
1	79,66%	8,47%	11,86%	100,00%
Grand Total	**62,86%**	**15,24%**	**21,90%**	**100,00%**

Source: Own build with data from the survey

Once having seen the results of YouTube, there is no surprise seeing that it happens more or less the same with Twitch. In this case, 34% of gamers who do not follow esports on Twitch play on both kind of games while most of them, 42%, are paying gamers. In fact, 89% of the ones that follow Twitch play both kind of games which is nearly 10% more than what happens in the case of YouTube (see Figure 16).

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Figure 16: Twitch viewers and type of video game.

Count of Q13.1.2_FREE&PAY	Column Labels			
Row Labels	both	free	pay	Grand Total
0	34,00%	24,00%	42,00%	100,00%
1	89,09%	7,27%	3,64%	100,00%
Grand Total	62,86%	15,24%	21,90%	100,00%

Source: Own build with data from the survey

5.2. Answers to the hypotheses

The results of the corresponding inferential tests of the hypotheses of this thesis are presented here.

Table 1: summary of R Comander's results

Hypothesis	Test	p-value	Conclusion
H1.1	Paired t-test	$2,036*10^{-9}$	RH_0
H1.2	t-test for independent samples	0,3197	NRH_0
H2.1	Proportion test	1	NRH_0
H2.2	Two sample t-test	1	NRH_0
H3	Proportion	-	RH_0
H4.1	Chi squared test	$1,7*10-7$	RH_0
H4.2	Two sample t-test	$9,335*10^{-8}$	RH_0

Source: Own build

H1.1: Catalan supporters have increased the number of hours that they dedicate to watch esports with respect to the pre-pandemic times.

In order to answer this hypothesis, we focus on questions 20 and 21 of the survey, which are the variables that contain the number of monthly hours invested in watching esports before and after the lockdown, and we apply a t-test for paired variables. Figure 17 contains the hypothesis of the test and the corresponding output with the results. Since the p-value is smaller than the signification we can reject H_0 and say that there is statistical evidence of an increment in the time dedicated to watch esports. Actually the sample estimate is an increment of more than 6 hours per month.

Figure 17: Test for H1.1

H_0: There is not an increment of the time dedicated to watch esports after the lockdown.

H_1: There is an increment of the time dedicated to watch esports after the lockdown

```
        Paired t-test

data:  Q20_HORES_ARA and Q21_HORES_ABA
t = 6.141, df = 209, p-value = 0.000000002036
alternative hypothesis: true difference in means is greater than 0
90 percent confidence interval:
 6.253677      Inf
sample estimates:
mean of the differences
           7.909524
```

Source: Own build with R Comander

H1.2: Teleworking/Distance learning people have increased more the hours spent watching esports.

This hypothesis is answered with the data collected from the survey, creating a new variable to know the increase in hours spent in video games made from questions 20 (hours after pandemics) and 21 (hours before pandemics) and applying a t-test for independent samples with the variable from question 6. Since the p-value, in Figure 18, is greater than the signification, we cannot reject H_0, which means that is there is not statistical evidence to say that people who is Teleworking or Distance learning has increased more the hours spent watching esports than people who is not

Figure 18: Test for H1.2

H$_0$: Teleworking/Distance learning people have not increased more the hours spent watching esports after the lockdown.

H$_1$: Teleworking/Distance learning people have increased more the hours spent watching esports after the lockdown.

```
        Welch Two Sample t-test

data:  Q20.21_INC.HORES by Q06_TELE
t = -0.46911, df = 206, p-value = 0.3197
alternative hypothesis: true difference in means between group No and group Si is less than 0
90 percent confidence interval:
    -Inf 1.995059
sample estimates:
mean in group No mean in group Si
     7.195122         8.341270
```

Source: Own build with R Comander

H2.1. Casual and social players have increased more the time spent in video games than achievers, explorers, beaters and completionists during this year.

In order to make the analytics, first the types of players, from question 12, were separated in two different groups:

Group A: Competitive and social player.

Group B: Achiever, explorer beater and completionist.

Then, in order to answer the hypothesis, a proportion test has been done with the two groups of question 12 and a new variable from question 16 having in one hand people who answered that they did not increase the time spent in video games during the pandemics, and on the other hand the rest of the answers, being all of them that they had increased the time spent in video games. In Figure 19 it can be seen that the p-value=1 is greater than the significance, there is not statistical evidence to confirm the hypothesis, otherwise there is statistical evidence to affirm the opposite, that group B (achiever, explorer beater and completionist) have increased more the time spent in video games than group A (casual and social players).

Figure 19:Test for H2.1

H0: The proportion of people that have increased the time invested in watching video games is smaller or equal in group A than in group B.

H1: The proportion of people that have increased the time invested in watching video games is greater in group A than in group B.

```
Percentage table:
    Q16_SI.NO
Q12_1   Si   No Total Count
    A 75.0 25.0   100    120
    B 97.8  2.2   100     90

        2-sample test for equality of proportions without continuity correction

data:   .Table
X-squared = 20.658, df = 1, p-value = 1
alternative hypothesis: greater
90 percent confidence interval:
 -0.2822087  1.0000000
sample estimates:
   prop 1     prop 2
0.7500000 0.9777778
```

Source: Own build with R Comander

H2.2 Casual and social players have spent more money in video games than achievers, explorers, beaters and completionists.

In order to make the analytics, we use the same groups for players from H2.1

Figure 20: Test for H2.2

H0: Players in group A invest at most the same money in average than player in group B.

H1: Players in group A invest more money in average than player in group B.

```
        Welch Two Sample t-test

data:  Q11_INV by Q12_1
t = -4.8802, df = 140.75, p-value = 1
alternative hypothesis: true difference in means between group A and group B is greater than 0
90 percent confidence interval:
 -166.0546       Inf
sample estimates:
mean in group A mean in group B
      103.8333        235.2222
```

Source: Own build with R Comander

Again there is no evidence to reject H0, but there is evidence to say the opposite, that is, that players who do not define themselves as casual or social have spent more

money on average. In fact, if we look at Figure 20, where a 90% confidence interval is represented for each category of players, it can be seen that players defined as casual and social spend less money on average than, players defined as achievers, explorers, beaters or completionists. Actually, in Figure 21 we can see the mean of expenses in a year for each specific kind of player

Figure 21: Graphic for H2.2
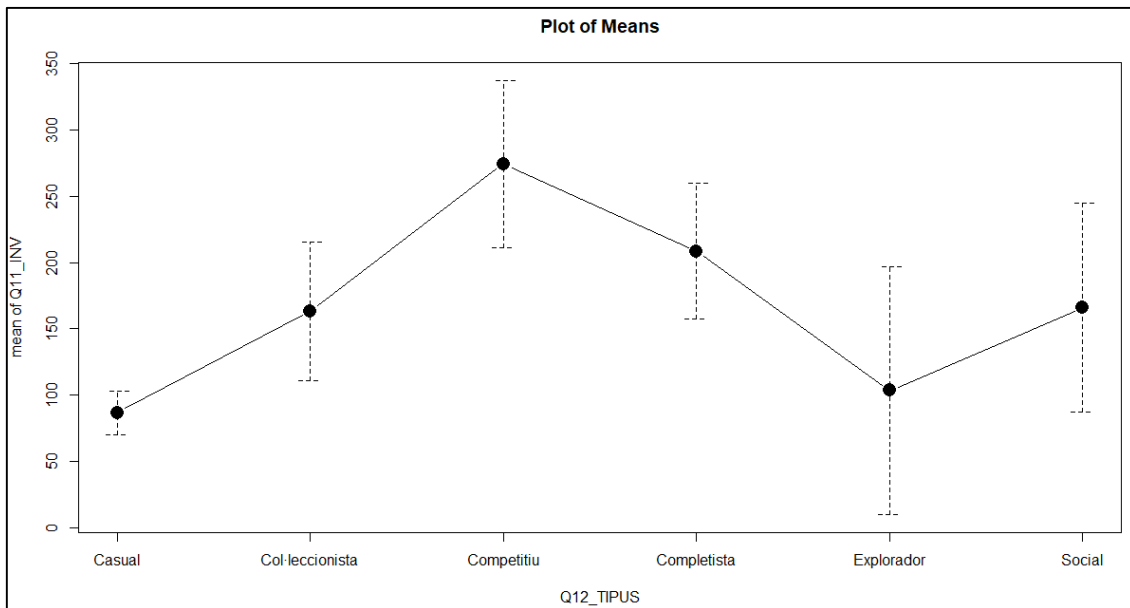
Source: Own build with R

H3. The main purpose of players was to connect with friends.

If we compute the proportion of players that select each option in question 16 we get the table in Figure 22. One may see that the proportion of respondents that select the option "Connect with friends" is over a 60%, meanwhile the rest of options are under chosen by less than a 30% of the respondents. Actually here we don't need to use inference to claim that H3 holds.

Figure 22: Test for H3

H$_0$: The main purpose of players was to connect with friends

H$_1$: The main purpose of players was not to connect with friends

```
                mean    n
Q16_COMP   0.1047619 210
Q16_CON    0.6000000 210
Q16_LLIURE 0.1142857 210
Q16_MILL   0.2857143 210
Q16_NO  |  0.1523810 210
Q16_NOUS   0.2000000 210
Q16_REL    0.2285714 210
```

Source: Own build with R Comander

H4.1: There is a relationship between the type of player and the fact that the player watches esports in YouTube or Twitch.

In order to answer this hypothesis, we focus on questions 12 and 23 of the survey. Actually from question 23 we construct a new indicator variable that tells when a player watches esports in Twitch or YouTube. With these two variables we do a Chi-squared test of independence to conclude (Figure 23) that we can reject the null hypothesis and say that there is statistical evidence to claim a relationship between these two variables.

Although the table in Figure 23 has several cells with less than 5 data, we can consider that the test is valid, since the differences are for casual (majority for non-watchers) and beater-completionist players (majority in watchers).

H4.2: The players that watch esports in YouTube or Twitch invest more money in video games than players that don't use these platforms.

Now we use questions 11 and again this new indicator variable to answer this hypothesis with a t-test for independent samples.

Figure 23: Test for H4.1

H0: There is not a relationship between the type of player and the fact that the player watches esports in YouTube or Twitch.

H1: There is a relationship between the type of player and the fact that the player watches esports in YouTube or Twitch.

```
Frequency table:
     Q12_TIPUS
Q23_T_Y Casual Col·leccionista Competitiu Completista Explorador Social
   No      50              4           2           6           2     10
   Yes     44              2          48          22           4     16

Row percentages:
     Q12_TIPUS
Q23_T_Y Casual Col·leccionista Competitiu Completista Explorador Social Total Count
   No     67.6            5.4         2.7         8.1         2.7   13.5 100.0    74
   Yes    32.4            1.5        35.3        16.2         2.9   11.8 100.1   136

        Pearson's Chi-squared test

data:   .Table
X-squared = 39.721, df = 5, p-value = 0.00000017
```

Source: Own build with R Comander

Figure 24: Test for H4.2

H0: The players that watch esports in YouTube or Twitch don't invest more money in average in video games than players that don't use these platforms.

H1: The players that watch esports in YouTube or Twitch invest more money in average in video games than players that don't use these platforms.

```
        Welch Two Sample t-test

data:  Q11_INV by Q23_T_Y
t = -5.5461, df = 196.74, p-value = 0.00000009335
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -161.53068  -76.78808
sample estimates:
 mean in group No mean in group Yes
        82.97297         202.13235
```

Source: Own build with R Comander

Since the p-value is of order 10^{-8} we can reject H0 to say that the money invested in video games by players that watch esports in Twitch or YouTube is greater than the money invested by the rest of the players.

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6. Conclusions and future lines of research.

In general, it is clear that Catalonia is also following the trend where video games and esports industries are in continuous expansion. There has been an increment on the consumption of some of the most popular titles of videogames (see Figure 10) as well as an increment on the hours spent playing videogames, where 79% of respondents answered that they have increased the time spent in video games due to the quarantine.

On the other side, hypotheses 2.1 and 2.2 don't hold, moreover there are evidences that just the opposite holds. Here it was supposed that casual and social players would be the ones that had increased more the time and money spent in videogames, but the sample points on the opposite direction that is the other group of players, including achievers, explorers, beaters and completionists is the one that spent more time and money in videogames during the pandemic. We expected that the less focused kind of players (casual and social) to be the ones with the major change in mentality.

Hypothesis 1.2 cannot be proved as there is no statistical evidence to affirm it; there is one hour of difference in the rise in consumption of esports that teleworking and distance studying people has experimented according to the sample, but it is not big enough to claim our hypothesis

The other hypotheses, 1.1, 3, 4.1 and 4.2, were in the good direction and they have been verified. People from Catalan territories experimented an increase in the consumption of esports. This increase could be in part due to the increase of free time for spending more time at home, which is directly related to the increase of streaming platforms as Twitch and the increase in viewers that has had since the beginning of the quarantine (see Figure 5). And hypothesis 3, which was also verified, demonstrates that the main reason for players to increase the time spending in video games was for a social fact. 60% of respondents that increased the time spent in video games said that it was for connecting with friends (see Figure 22). This is probably the most important benefit that video games have given to us as a society, and is the possibility to connect each other and to play together at any time of the day and even with restrictions on face to face meetings, and this was fundamental during the quarantine for all those people that needed to contact and have fun with their friends and family. Moreover, it has been proven that there exists a relation between the type of player and the interest on esports in audio visual platforms. Beaters and completionists are

the ones more focused on watching esports, while most of casual players do not watch them (see Figure 23). Last hypothesis proven has been that players who watch esports on YouTube or Twitch spend more money on video games than players who do not watch them (see Figure 24), in fact, it is interesting to say that 24% of players that do not watch esport play free to play video games only, while around 8% of esports viewers just play free to play video games (see Figures 15 and 16)

Nevertheless, we must admit that our results are completely conditioned by the sampling method and the sample itself. Since we looked for a specific profile of respondent snowball and convenience sampling method was the best one, but we could not get a sample big enough to combine with probabilistic sampling methods. This fact, together to the not big enough sample size, make our results not very reliable in general.

All in all, it has been really interesting to study the evolution of video game and esports habits of consumption and to see that its evolution is still rising. Also, seeing that the most popular games in the analysis of the sector of (Newzoo, 2021) (see Annex 2) are not the same in Catalonia, as is the case of popularisation that FIFA and Call of Duty has in Catalonia is higher in comparison of other video games.

From this point, the work could continue being studied. One point of view that could be really interesting is, in approximately one year, to make another survey (this time with an enough representative sample) to study if all those people that increased their consumption on video games and esports due to the quarantine and the restrictions will continue consuming them or if it was just something temporary.

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8. Annexes

Annex 1: Survey

1. Gènere
    a. Home
    b. Dona
    c. No binari
    d. No vull contestar

2. Edat
    a. (llistat d'edat)

3. Comarca
    a. Alt camp
    b. Alt Empordà
    c. Alt Penedès
    d. Alt Urgell
    e. Alta Ribagorça
    f. Anoia
    g. Vall d'Aran
    h. Bages
    i. Baix camp
    j. Baix Ebre
    k. Baix Empordà
    l. Baix Llobregat
    m. Baix Penedès
    n. Barcelonès
    o. Berguedà Cerdanya
    p. Conca de barberà
    q. Garraf
    r. Garrigues
    s. La garrotxa
    t. Gironès
    u. Maresme
    v. Moianès
    w. Montsià

    x. Noguera

    y. Osona

    z. Pallars jussà

    aa. Pallars sobirà

    bb. Pla d'Urgell

    cc. Pla de l'estany

    dd. Priorat

    ee. Ribera d'Ebre

    ff. Ripollès

    gg. Segarra

    hh. Segrià

    ii. Selva

    jj. Solsonès

    kk. Tarragonès

    ll. Terra alta

    mm.   Urgell

    nn. Vallès occidental

    oo. Vallès oriental

4. Nivell d'estudis superats

    a. Primària

    b. Secundaria

    c. Batxillerat

    d. Grau mig

    e. Grau superior

    f. Grau universitari

    g. Postgrau, Máster, Doctorat

    h. Altres

5. Quina és la teva ocupació?

    a. Estudiant

    b. Empleat

    c. En atur

    d. Autònom

6. Degut a la pandèmia teletreballes o tele-estudies?

    a. Si

    b. No

7. Quants dies a la setmana teletreballes o tele-estudies?

    a. Resposta oberta

8. Quina plataforma utilitzes per jugar actualment? (més d'una opció)

    a. PS5

    b. Xbox series x

    c. NintendoSwitch

    d. Nintendo 3DS/2DS

    e. PC

    f. Ps4 i generacions anteriors

    g. Xbox ONE i generacions anteriors

    h. WII/WII U

    i. Smartphone

    j. No jugo

    k. Altres

9. UtilitzesPC per jugar?

    a. Si

    b. No

10. Quin preu té el teu PC?

    a. Resposta oberta

11. Quant has invertit econòmicament en l'últim any en videojocs?

    a. Resposta oberta

12. Quin tipus de jugador et consideres?

    a. Casual (jugues de tant en tant, no et capfiques gaire en el joc)

    b. explorador(t'agrada explorar totes les mecàniques i llocs més amagats del joc)

    c. competitiu (la teva motivació és superar reptes i aconseguir bonespuntuacions)

    d. social (jugues per estar amb amics, parlant oconeixent a gent nova)

    e. atleta de esports (competeixes en tornejos oficials)

13. Quins títols de videojocs has jugat durant la pandèmia?

    a. League of Legend

    b. Fortnite Battle Royale

    c. Counter Strike

    d. Hearthstone

    e. Minecraft

    f. Player Unkown's Battlegrounds

    g. World of Warcraft

    h. Overwatch

    i. Tom Clancy's Rainbow Six: Siege

    j. Grand Theft Auto V

    k. No he jugat

    l. Altres

14. Quins títols de videojocs freqüentaves abans?

    a. League of Legend

    b. Fortnite Battle Royale

    c. Counter Strike

    d. Hearthstone

    e. Minecraft

    f. Player Unkown's Battlegrounds

    g. World of Warcraft

    h. Overwatch

    i. Tom Clancy's Rainbow Six: Siege

    j. Grand Theft Auto V

    k. No he jugat

    l. Altres

15. T'has tornat un jugador mes competitiu durant la pandèmia?

    a. Si

    b. no

16. Quin motiu t'ha portat a jugar més durant la pandèmia (si s'ha incrementat)

    a. No he incrementat les hores de joc

    b. Connectar amb amics

    c. Relaxar-me de l'estrès que em causava la pandèmia

    d. Completar missions i objectius

    e. Provar jocs nous

    f. Millorar en el/s joc/s que ja jugava

      g. altres

17. Ets consumidor/a de plataformes de streaming per al teu entreteniment?

      a. Si

      b. No

18. Miraves esports abans de pandèmia?

      a. Si

      b. no

19. Mires ara?

      a. Si

      b. no

20. Quantes hores mensuals dediques a la visualització de eSports i contingut audiovisual semblant (d'un streamer competitiu) al mes?

      a. Resposta oberta

21. Quantes hores mensuals dedicaves abans de la quarantena a la visualització de eSports i contingut audiovisual semblant (d'un streamer competitiu) al mes?

      a. Resposta oberta

22. De quins videojocs segueixes les competicions?

      a. Resposta oberta

23. En quines plataformes de streaming segueixes les competicions eSports i contingut audiovisual semblant(d'un streamer competitiu)?

      a. Twitch

      b. Youtube

      c. Mixer

      d. Facebooklive

      e. Instagram live

      f. Altres (oberta)

24. Quin motiu t'ha portat a consumir més eSports i contingut audiovisual semblant?

      a. Resposta oberta

25. Has participat en algun torneig?

      a. Si

      b. No

26. Quina estimació de despeses has tingut per torneig?

      a. Resposta oberta

27. Quin valor econòmic té el premi màxim obtingut?

    a. Resposta oberta

Annex 2: Top 25 Games by Live Esports Hours (2019)

Game	Main Device Competed on	Hours Watched
League of Legends	PC	348.8M
Counter-Strike: Global Offensive	PC	215.0M
Dota 2	PC	198.9M
Overwatch	PC	109.9M
Hearthstone	PC	37.0M
Tom Clancy's Rainbow Six: Siege	PC	32.4M
Arena of Valor	Mobile	31.6M
PUBG Mobile	Mobile	27.9M
Fortnite	PC	27.5M
PLAYERUNKNOWN'S BATTLEGROUNDS	PC	26.8M
Starcraft II	PC	22.8M
Rocket League	PC	20.4M
Super Smash Bros. Ultimate	Console	18.6M
Garena Free Fire	Mobile	17.8M
Call of Duty: Black Ops 4	Console	13.3M
Magic: The Gathering	PC	12.9M
World of Warcraft	PC	10.3M
FIFA 19	Console	7.7M
Street Fighter V	Console	7.0M
Super Smash Bros. Melee	Console	5.2M
Mobile Legends: Bang Bang	Mobile	4.0M
Tekken 7	Console	3.8M
Clash Royale	Mobile	3.8M
Teamfight Tactics	PC	3.4M
FIFA 20	Console	3.0M
Total Top 25		**1209.6M**

Top 25 Games

by Live Esports Hours
Watched on Twitch,
YouTube, and Mixer | 2019

16 / 17

Source: (Newzoo, 2021)

55

Annex 3: "StarCraft II"

"StarCraft II: Wings of Liberty", being the 11[th]esport with more hours watched in 2019 (see Annex 2), is a real-time strategy (RTS) video game released in 2010. It is the sequel of "StarCraft" which was released in 1998. It's a game developed by Blizzard Entertainment, one of the biggest companies of video games and most of its games in the top of esports games.

The goal of "StarCraft II" is to build a base while recollecting minerals and gas to upgrade the production and technology. With this economy created, the player has to build an army in order to destroy the bases of the opponents (Blizzard, 2021) (see Annex 3 for more information).

The RTS genre is very demanding for players, being the genre that demands more actions per minute in professional level, making a huge level of difference between a god player and a professional one.

"StarCraft II" is based in the same universe and shares the same mechanics than its precedent "StarCraft", the bet of Blizzard was to create a game to be in the top of esport representation, but also, to make that the game would be enjoyable in the low and medium level scene.

Grau en Administració i Direcció d'Empreses i Gestió de la
Innovació (Docència en anglès)

Annex 4: "Fortnite Battle Royale"

"Fortnite Battle Royale" is an example of a free to play video game. Its genre is battle royale as its name says, and it was released in 2017 by Epic Games.

"Fortnite Battle Royale" consists on a 100 players game in which only one can survive, to achieve that, the players have to kill each other while running away from the poisonous mist, which makes players to go to the middle of the map. In the game, players have to collect items as wood or other minerals and potions, as well as guns and bullets for the guns. With the wood and minerals, the player constructs platforms to hide and protect, and most important for going higher than the opponent as the one that is higher is the one that has more advantage in a 1 vs 1 against another player (see Annex 4 for more information).

There were a lot of children addicted to "Fortnite" and Epic Games was accused for that (what means that they did a really good job when creating the game). This addiction and popularisation that the game had since the beginning turned into a huge entrance of income to Epic Games, earning 1.2 billion dollars in the first 10 months, with 125 million players (Ganti, 2020).

As a free to play game, those earnings came from purchases in the in-game shop, where the 70% of "Fortnite" players have bought at least once (Jaye, 2019). "Fortnite" in-game shop works with its own currency, so players have to earn this currency while playing and performing good games or buying specific amounts of the currency with real money (Epic Games, 2021). In the in-game shop, "Fortnite" players do not buy extra content for the game, they just personalize their experience, the players are buying skins, cosmetic effects and dances for its character.