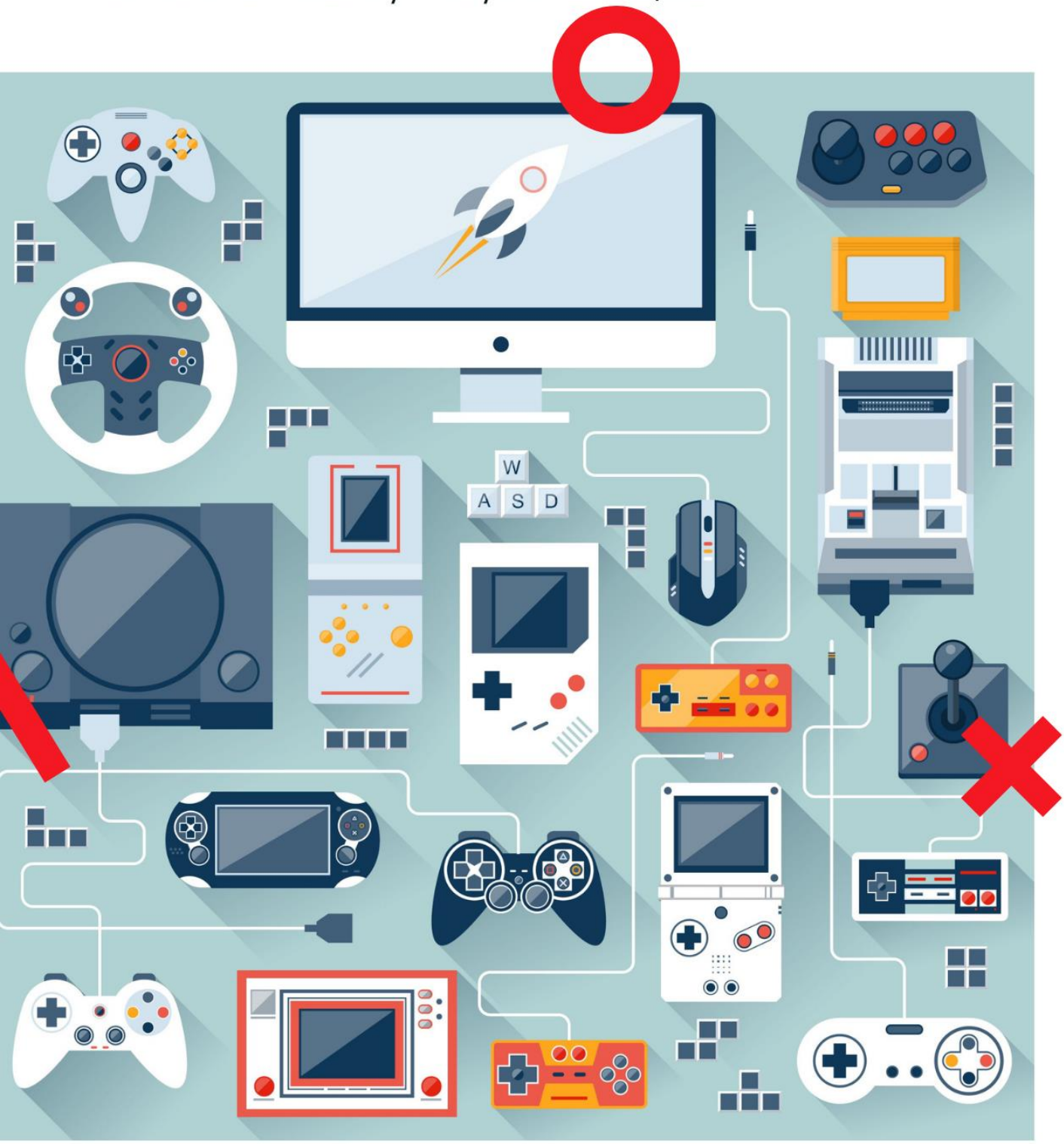
The Online Gaming Industry

International Industry Analysis - 2020/21



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Executive Summary

Online gaming is increasingly growing into one of the most profitable media and entertainment industries on a global scale, in some instances even more than the film industry. The online gaming industry is segmented into three sections, the PC-gaming, console, mobile, which are commonly used for playing virtual games online in a multiplayer format. The consumer bases amongst the segments are similar and consist of players wanting to interact and socialize on the virtual platforms.

From the online gaming industry's life cycle, the industry's main growth drivers have shifted segments overtime going from the console and computer-based gaming that boosted the industry. However, the report analyzes how mobile games are now the most dominant segment. This highly fragmented industry finds itself in a late growth stage with the mobile app games in an advanced stage of maturity.

Different business models can be pointed out, which include the classic total price model, freemium, subscription and advertising. The freemium business is one of the most successful models in online gaming, however, it will be subject to substantial changes and adaptations in the upcoming years as it is still quite young.

The year 2020 has been marked by a global pandemic caused by COVID-19 that led to lockdowns in most countries across the world. When the majority of the economy had to stay inside, there was an increase in demand for the digital entertainment market, including online gaming, due to the abundance of time spent in the own household by current and new users. Innovation will play its contribution to the industry's growth through the use of new technologies such as Virtual Reality and cloud gaming, both of which promote ease of access and creativity for players in the games.

Online gaming is expected to strengthen its position as one of the main forms of digital entertainment as long as people will have devices to play on. Therefore, the industry is expected to continue its growth over the upcoming years.

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PLAY AGAINST THE CHAMPIONS.

#1 - INTRODUCTION

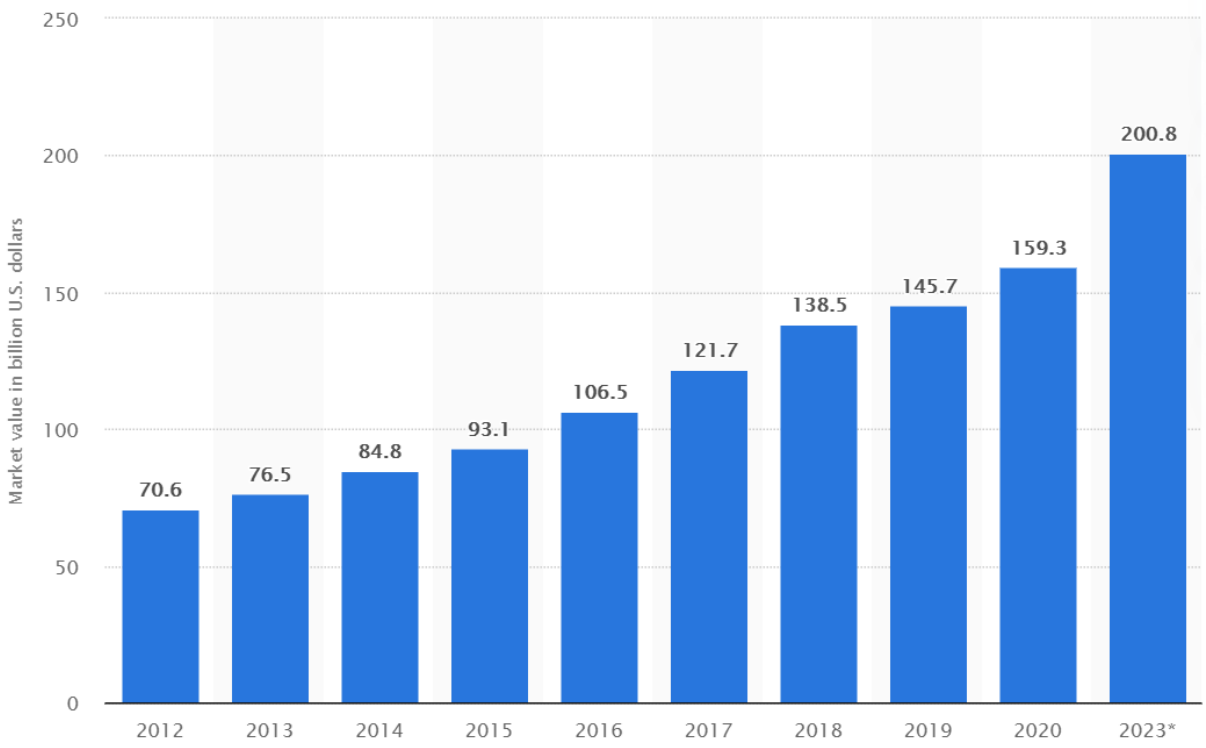
1. Overall introduction of the Online Gaming Market

The online gaming industry is increasingly growing into one of the most profitable media and entertainment industries in the world. Games are making, "more money than some of Hollywood's biggest films," (BBC). For example, the film Jurassic World that came out in 2015, made, " an estimate £336m in its opening weekend. Later that year, over the same time period, the game Call of Duty: Black Ops 3 generated £361m," (BBC). Call of Duty, a multi-player video game, made approximately 7.44% more profit in millions than one of the highest grossing films of 2015.

Games have been a part of human culture for a very long time. Playing is within human nature and one of the characteristics that differentiates our species from others. The way we play has changed over time: from simple and ancient card games to board games, to arcade games, and now virtual online gaming. An online game, "is a video game that is in general played through the Internet" (Rollings, Andrew. 2006). They dominate the online gaming market and can be found on modern gaming platforms, like PCs, consoles, and mobile devices. They can span across many genres, for example, first-person shooters, freemium games, strategy games and massive multiplayer online role-playing games (MMORPG), varying themselves in complexity, mode, number of players allowed, design and game styles.

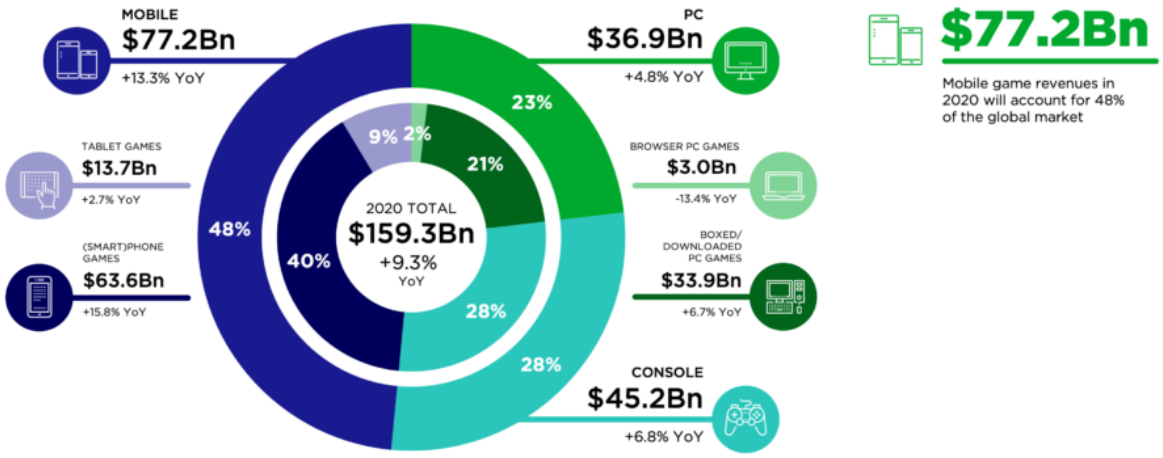
In 2019, the online gaming segment reached $152 billion, with $36.5 billion generated by China and $36.9 billion in the United States alone, in revenue (Newzoo.com, 2020). With the rise of the smartphone, the gaming industry shifted from PC and console to mobile games. Just as the games themselves, monetization also comes in many different forms. You can buy multi-player games at a store with a price tag. For mobile games, there can be in-App purchases. Another example is in the multiplayer European football game, FIFA, that has 'pack openings', where the users pay with actual money and get a mystery box that will give them a pack of players for their ultimate team. Some users will spend over hundred euros to get a really good player on their team such as Cristiano Ronaldo. Ads on the games are also a way to incorporate monetization for the industry.

Figure 1 - Video Game Market Value Worldwide from 2012 to 2023 in Billion U.S. Dollars (statista.com, 2020)



* expected market value by 2023

Figure 2 - Global Games Market in 2020 per platform and segment with yearly growth rates (newzoo, 2019)




A BATTLE OF LEGENDS
#2 - DEMAND ANALYSIS

2. Demand Analysis

2.1 Segmentation by regions and genders

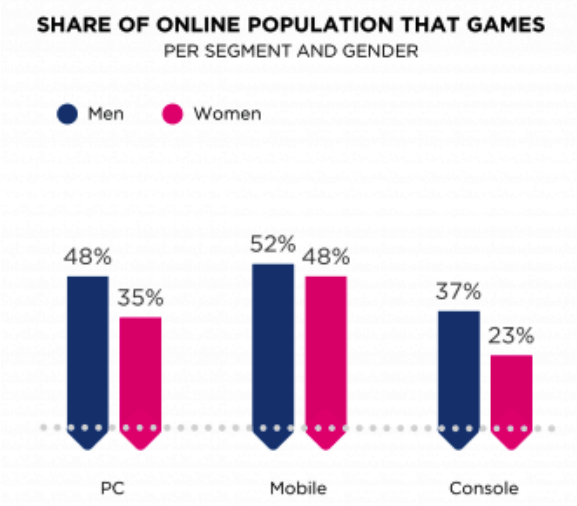
The market for online gaming can be segmented in many different ways. For example, by region, platforms, types of games, gender or age. Esports can be applied as an indicator on how relevant and strong online gaming is for a specific region. Following that, online gaming has a different standing in Asia than in the western world, especially in South Korea, Taiwan and China (The ASEAN, 2020). e-Sport fan counts reach up to 510 million people, an estimate of, 590 million people in Asia are playing e-Sport relevant online games, and generated "$519 million in revenue in 2019 in Asia, making it the No. 1 region in the world for such revenue," which is half of the world's total e-Sport revenue, (Takahashi, Dean. 2020). Mobile esports games in Asia generated $13.3 billion in 2019, accounting for even 68% of global mobile esports games revenue. This is because the esports scene is more accepted by the public and being a professional online gamer is now perceived as a regular job. People do not only play for entertainment or the casual and well-established pro gamer scene plays competitive online multiplayer games in teams that create such a hype they fill entire stadiums: the League of Legends worlds finals in 2017, 2018 and 2019 filled the stadiums of Seoul, Beijing and Shanghai respectively (riftherald.com, 2020). Although these kinds of events are watched by a global audience, it is clearly the Asian countries that dominate the scene.

The standing and acceptance of playing online games more than just casually is different in western countries. Regarding the western world, North America should be mentioned here. The continent accounted for 38% of the global online gaming market revenue in 2019, almost double the amount of China (Statista, 2019). However, neither North America or Europe are the center of online gaming - a smaller player base and a smaller but still significant e-Sport scene are the reason. Overall, the segmentation into regions is reasonable when seeing the huge differences per country.

Another interesting segmentation approach is by gender, since here the assumptions one would make are contradicting with what numbers say. Society has that idea of online games being more something for boys and men then for girls and women, especially because many very famous games are shooter games or at least somehow related to violence. Research shows that unlike the common public perception, the gender difference in online gaming is not dramatic: in 2020, 59% of gamers were male, 41% female (Gough, Christina. 2020).

This small gap is mainly driven by the very equal distributions of gender when it comes to mobile gaming. Other platforms, like consoles and PC show a greater gap of 11% for consoles and 12% for PCs in 2017.

Figure 3 - Share of Online Population That Games (Newzoo, 2020)



What also distinguishes the female and male online gamers are the types of games played. On the surface, favorite game types like Strategy, Adventure and Shooter games are the same for both genders. But looking closer, women are more holistically interested, since they additionally like puzzles, simulations and arcade games (Newzoo, 2020).

Segmentations by region and gender give interesting insights on the nature of demand in the online gaming industry, however, these segmentation do mainly take cultural and societal means into account and not dive deeper into the much more multifaceted world of online gaming.

2.2 Market Segmentation by Platform

For a deeper dive into the industry, the segmentation by platforms is depicted as the most suitable one as it displays the differences in the gaming industry per platform best and each segmentation has unique characteristics. The identified platforms are mobile, console, and PC-gaming. These three types of devices are commonly used for playing online games of all kinds and each segment has its own properties which we will look into in the further analysis. Still, they share some common factors; their user group enjoys the experience of playing virtual games online, preferably together with other people or even friends during their free time. They share a common sense of competition, want to interact with others socially in the virtual world or just entertain themselves. The demographics of the group are similar as well; users are typically younger aged, being either students, or young professionals.

Figure 4 - Global Online Gaming Revenues by platform, present and forecast (Newzoo, 2020)

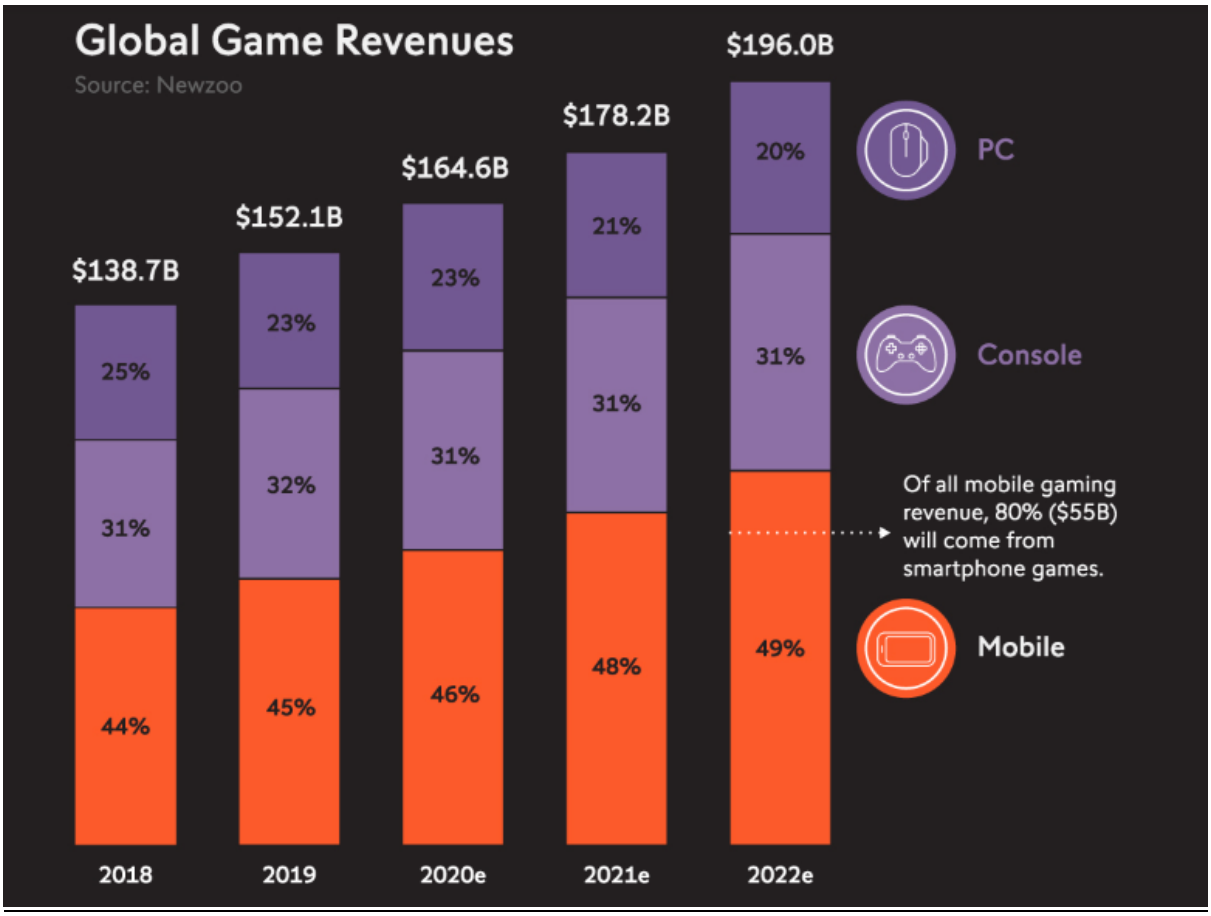


Table 1 - Sustainable Market Valuation and Key Success Factors per Platform

Ref. year: 2019	Mobile	Console	PC
Key Success Factors	● Easy to play ● Freemium model ● Additivity ● Online advertisement ● Usability/experience	● Network effects (big player-base) ● Strong Intellectual Property ● Good gameplay ● Creative storyline	● Network effects (big player-base) ● Strong Intellectual Property ● Good gameplay and storyline ● Compatibility with diff. PCs ● The right distribution channels
Sales	$68.5 Billion	$48.7 Billion	$34.9 Billion
Growth (5 years)	CAGR 13.3%	CAGR 6.80%	CAGR 4.80%
Average Margin	24.13%	21.34%	20.54%
Risk	0.268	0.268	0.268
Sustainable Value	1.16	0.93	0.91
Sust. Market Valuation	**171**	**57**	**34**

2.2.1 Mobile Gaming

Playing games on the phone is the most common type of online gaming today. There is no price entry barrier as most of the people already have powerful smartphones or tablets, capable of processing even complex games at ease. Wherever the customer might be, either waiting for the bus, passing time on a train, or just being bored at home, the gaming world is just an app away. It is not surprising that mobile games have increased in popularity. With smartphones getting more and more advanced, the limits of what is possible is constantly pushed, allowing a more enjoyable gaming experience. Still, the types of games played are optimized for mobile phone users and different from consoles and PCs: games tend to be

shorter, less complex and easier to handle. Also, the new gaming type “freemium” became popular on phones, which is where the online game is free, but people need to pay real money at some point to make in-game progress.

Complex multiplayer games are also a part of mobile gaming, for example games such as Heads Up, an online app guessing game, can be played during a break at school with fellow classmates.

In recent years, the technical capabilities of phones has increased so much so that big publishers for PC and console multiplayer games are now making mobile optimized versions of their games, so that users can play hyped titles like Fortnite, League of Legends or FIFA even when they are not at home. In addition to this, the social interaction accompanied by an enjoyable game, combined with limitless availability that have helped mobile online games to thrive in the past years. The revenue for mobile online gaming was 68.5USD Billion in 2019, which is 45% of the total gaming market.

A forecasted CAGR of approximately 13.3% between 2020 and 2025 indicates the huge potential of this growing market, being the fastest growing segment in the online gaming industry (Jones, Katie. 2020). This is also reflected in the sustainable market value indicator with a range of 141 to 207 and an average of 171, based on the expected growth rate, margin and a sustainability index of 1.16. Besides being the largest and fastest growing segment, the mobile gaming segment is also the most sustainable one. Compared to the console and PC gaming segments, it is software-heavy instead of hardware-heavy. The only hardware needed are phones and tablets, that people own anyways.

Speaking of Key Success Factors, the first one for mobile games is that the game should be accessible for new players. The player should be able to learn how to play the game fast. If the player does not understand how to play the game from the beginning they are likely to just download another game since there is no sunk cost in doing so (most mobile games are free to download).

A successful mobile game should also be addictive to make players stick. If players get bored quickly the switch cost is low to change game. There is no or low sunk cost to quit playing most mobile games since most of them are free to play.

A good monetization strategy is crucial to make a successful mobile game. Most mobile games are monetized through a freemium model. Since most mobile games are free to download consumers might not be willing to pay for a game that they did not yet try. Therefore most mobile games are free to play but either contain ads or contain perks only accessible to those who pay.

Good user experience is also key to the success of a mobile game. Mobile game users have low tolerance for crashes, complex interface and annoying ads. Players need to be able to find a game to be able to play it. The most popular method to market mobile games is ads on google and Facebook.

2.2.2 Console Gaming

One of the most specific segments in the online gaming industry is the market for console gaming. Thereby, devices particularly made for gaming are used to provide the consumer with the best gaming experience. The console itself gets connected with a TV to provide consumers the best visual experience compared to mobile and PC gaming. However, this makes the devices less flexible regarding the location and requires more effort to move it.

The systems are controlled by different types of controllers depending on the console, mostly a combination out of joystick and buttons. In contrast to the mobile gaming industry, games are designed to be played a longer amount of time. This enables complex game structures and also more intense computing processes since startup loading times are accepted and systems are equipped with better hardware.

Gamers frequently connect with their real-life friends online and it is seen as an extension of their social interaction between friends. The market is dominated by the console producers Xbox, PlayStation and Nintendo, further smaller producers exist but mostly in the low prices market segment and with a smaller range in game diversity.

The revenue for console online gaming was 48.7USD Billion in 2019, which is 32% of the total online gaming market. With a forecasted CAGR of 6.8% between 2020 and 2025, the console gaming segment is the second fastest growing segment after mobile gaming. The fact that console gaming does not grow as fast as mobile also shows the trend is moving towards mobile gaming.

This is also reflected in the sustainable market value indicator with a range of 48 to 68 and an average of 57, resulting from mentioned smaller current market shares, smaller growth rates and a lower sustainability index (0.93). This lower sustainability index compared to mobile gaming results mainly from being a less environmentally friendly segment due to the production of the consoles and low recyclability of those.

Speaking of Key Success Factors, first of all a big player base creates a network effect that helps retain old players and attract new ones. People want to play games together with their friends which creates incentives to buy the game their friends play. Some industry analysts even mention modern online games as a kind of social network.

In the game industry it is spoken about the need to have a strong IP. IP in this case stands for intellectual property, and in the online gaming industry IP represents the brand of a video game. Popular game series like Call of Duty, Grand Theft Auto or warcraft can be said to have strong IPs but also games based on popular movies for example.

Good gameplay is crucial to the success of console games, which is the experience that the player has when they are playing the game. It is hard to quantify exactly what gameplay is, but it can be simplified by the enjoyment and entertainment factor of playing the game.

One factor that has been crucial to many games is creating a good storyline. This was how games like GTA V and Red Dead Redemption achieved their successes. However, a good storyline is not always important to games that are mainly focused on multiplayer like Call of Duty, Fortnite and Player Unkown’s Battlegrounds, since the action and the activity of other players who play together in alliances add to the game’s success factor.

2.2.3 PC Gaming

The PC Gaming segment is the segment where the video gaming industry evolved from and is still the biggest stake in the e-gaming scene. However, numbers show that the market share of PC Gaming is only 23% (34.9 Billion USD) of the total market revenue nowadays. Estimations predict that this will even continue to decrease slightly during the following years (Jones, Katie. 2020).

Compared with the Console gaming segment consumer benefit regarding the initial costs have to be made since most games can be played on a common PC or laptop and no additional purchases occur except for the game. The hardware market in the PC online gaming industry offers still a broad variety of options, most of them in the high-price market but for a basic gaming experience, this is not needed and targets mostly enthusiasts and professionals. The game's characteristics are very similar to those of the Console gaming and sometimes are even the same games which can be played together online independently of the device.

With a forecasted CAGR of 4.8% between 2020 and 2025, the PC gaming segment is the slowest growing segment in the Online Gaming Industry. This is also reflected in the Sustainable Market Value with a range of 29 to 40 and an average of 34, resulting from having the smallest current market shares, smallest growth rates and a lowest sustainability index (0.91). The sustainability index difference between Console and PC gaming is very small (0.02), since the hardware needed for the two segments have a comparable degree of environmental sustainability.

Talking about Key Success Factors, the segments of PC games and console games share key success factors as a big player base, strong IPs, good gameplay and good story. Some key success factors differ them though.

One circumstance that differs PC games from console games is that the developer of a PC game cannot assume every player has the same hardware. All devices of the same generation of a console have the same performance specifications. This is not the case for PC's and the consequence is some players having worse devices than others. Hard core gamers can be assumed having powerful computers but most people's computers have more moderate

performance. For a PC game to be successful it needs to be compatible with the devices of the targeted market.

One of the main differences between publishing a game for PC compared to console is the vast choice of distribution channels. When a game is published for Nintendo, PlayStation and Xbox the publisher can only sell through either physical retail or the console makers digital stores. For PCs the options of digital sales channels are close to unlimited. For a PC game to be successful in the market, the game needs to exist on the digital sales platforms where the target consumers are.

2.3 Global Demand & Supply Trends (PESTEL)

2.3.1 Politics

Table 2 - Political Trends

Context	Key Trend Analysis	Impact	
Political		**Demand**	**Supply**
Government Internet Regulation	Governments want to regulate and censor the internet to tackle the harmful content online.	- Higher barriers to entry when trying to sell games to China	- Higher barriers to entry when trying to sell games to China
Net neutrality	Open internet access, internet service providers will not prioritise one service over the other	- Slows the internet down, players will get frustrated with service and play less + Access to all games online	- Slows the internet down which slows production down + Larger companies do not have competitive advantage over smaller ones. All gaming companies have equal access to the games
Government regulation on online gaming addiction		- decrease in demand	- Leads to a decrease in production due to the decrease in demand

The political environment can affect the online gaming industry when it comes to internet regulation, and government regulation on gaming addiction.

Trend: Internet regulation

Internet regulation laws vary from country to country. In most western countries such as in Europe and the United States, the internet regulations tend to be more easily accessible. However, some governments are trying to regulate the internet, which would cause harm to the online gaming industry. The, UK's secretary of state for digital, culture, and media, Jeremy Wright, wanted to make tech firms responsible," for tackling harmful content and activity online," because, "self-regulation among tech companies has not been sufficient and action in the form of regulation is now needed," (Griffiths, James. 2019). In China, "private tech firms carry out the majority of internet censorship," which means that online gaming would have high barriers to entry when trying to sell games to China.

Moreover, in the United States and Europe, the net neutrality laws would have both negative and positive impact on the online gaming industry. Net Neutrality grants open internet access, where the idea is that all content will be treated equally and internet service providers will not prioritize material or, "block you from accessing a service like Skype, or slow down Netflix or Hulu, in order to encourage you to keep your cable package or buy a different video-streaming service," (Finley, Klint. 2020). The pros to net neutrality is that it promotes competition by ensuring, "that larger companies don't have yet another advantage over a tiny startup," (ITpro.), which is good for small online game startups who need a leg up in the industry. Another pro, is that companies are not allowed to charge the end user a free to, "access vital services, like … entertainment platforms like gaming networks" (Shepherd, Adam. 2020)

However, net neutrality can have a negative impact on the online gaming industry due to the lack of prioritization on the internet by slowing down the internet and therefore having a lower quality playing time. This is because even a, "tiny video streaming service should in theory be as speedy and glitch-free as Netflix," (Shepherd, Adam. 2020). Online gaming consumers will get annoyed with the speed of the game and could switch to more offline gaming services which would decrease online gaming industry sales.

Trend: Government regulation on online gaming addiction

The government can regulate online gaming use which would have an effect on demand. In Japan for example, the government of Kagawa Prefecture on the island of Shikoku, had limited video gaming time and internet use for, “anyone under 20 years old,” try and stop video gaming addiction (Dooley, Ben, and Hikari Hida., 2020). This is the majority age in Japan, which is the, “birthplace of Mario bros, and Pac-man,” signifying the importance of video gaming (Dooley, Ben, and Hikari Hida., 2020). If the government is putting heavy regulations on the gaming industry, this would have adverse effects on demand.

The World Health Organization, WHO, added “gaming disorder” to a list of officially recognized diseases in 2018 (Dooley, Ben, and Hikari Hida., 2020). Government efforts to help the video gaming addiction problem have included a, “tighter regulation of the gaming industry,” which would reduce sales of underaged gamers who are dependent on another person’s income, such as a guardian, parent, or other.

2.3.2 Economy

Table 3 - Economic Trends

Context	Key Trend Analysis	Impact	
Economy		**Demand**	**Supply**
Phase of global growth	**Global business growth before corona outbreak, M&A wave**	+ M&As lead to knowledge expansion and technology transfer in online gaming due to synergy effects	+ Companies/Game developers have a higher cash volume to spend on acquisitions or new tech - Costs are higher for supplies and labour
Recession	**Negative Economic growth, Increase in taxes, decrease in inflation**	- An increase in taxes could lead to an increase in game prices - Buyers have less money to spend on non-essentials like online gaming	- Increase in taxes leads to decrease in revenue for the industry - Deflation occurs which leads to a decrease in expenditure in the economy meaning less room for growth -
COVID-19 Pandemic	**Lockdowns, people spend more time at home, many digital products experience rapid growth**	- Increase in demand for online gaming & entertainment due to an increase of free time + 40% of millennials listed video games as their top form of entertainment	+ Strong development in games due to increase in demand for online gaming & entertainment and supply-chain was not heavily affected

Trend: Recession

In the United States alone, the gaming industry as a whole, "supports a total economic impact including: $261.4 billion of output (business sales) 1.8 million jobs with $74.0 billion of labor income," which includes wages and salaries. This creates, "$40.8 billion of federal, state and local taxes, including $10.7 billion of gaming taxes," (*American Gaming Association,*

2018). Therefore, this industry has a huge impact on the economy with the amount of jobs and salaries it supplies.

However, during a recession the decrease in consumer spending leads to an increase in because of the high percentage in taxes this decreases the overall profit the industry could be receiving but instead goes into the federal reserve. Deflation also occurs which means less government expenditure, "stock market failure, consumer desire to increase savings, and tightening monetary policies (higher interest rates)," (Investopedia. 2020) Overall a recession would force consumers of the industry to spend less on products which would inherently reduce the revenue stream for the industry. However, this will be explained further in the Covid-19 section, the online gaming industry did impressively well during the recession caused by the pandemic.

Trend: Covid - 19 effects on online gaming sales

The Coronavirus, otherwise known as Covid-19, led to a global pandemic and lockdown in most countries across the world. This affected the economy in many ways, resulting in, "the worst recession since the Great Depression in the 1920s,". The cumulative output loss to the global economy from 2020 and 2021 due to the pandemic is predicted to be over 12 trillion USD, (Gopinath, Gita. 2020). This is due to an increase in unemployment, inflation rates, and company debt.

Amongst other industries, the online gaming industry was more resilient when the global economy was hurt by the pandemic. When the majority of the economy had to stay inside there was an increase in demand for the entertainment market, including online gaming. The Valve Corporation, who owns the gaming distribution platform Steam, recorded on March 15th, 2020, a record number of players, "with as many as 20 million players online at one time," and as of March 17th, "Steam had 19.75 million peak users," (Howley, Daniel. 2020). Therefore, the pandemic has had a more positive impact on the demand side of the online gaming industry due to the abundance of free time their current and influx of users have. Deloitte listed that, "around 40% of Millennials and Gen Z listed playing video games in their top three [forms of entertainment]," during the Covid-19 pandemic (Arkenburg, Chris. 2020).

The supply-side of the online gaming had more of a negative impact during the pandemic. In the United States alone, "gaming supports more direct jobs than in other industries such as plastics manufacturing, or the motion picture and sound recording industry," (*American Gaming Association.* 2018). Specifically for online gaming this means that any industry related to gaming was affected such as, voice actors, artists, and game developers for the games were getting less work and the manufacturing for the materials have been slowed down which makes production more expensive and decreases supply. However, due to the vast increase of consumers, the supply-chain was not heavily affected as much as it could have been.

Trend: Phase of Global Growth ~ M&As

Mergers and Acquisitions are a good way for the industry to profit and the economy to profit as well due to the efficiency and economies of scale, the consumers can benefit from the, "improved overall economic welfare" (Blonigen, Bruce A., 2016). The technology company Sony has made a $250 million USD investment into Epic Games, the developer of Fortnite, "a game that counts 350 million registered users across all platforms, including mobile," and Fortnite is expected to make more than $1.8 billion (Basgoz , Asli, et al. 2020). Sony engaged in this merger because it was deemed profitable. Therefore, in conclusion, when the economy is booming the game developers in the industry or technology companies will be on the lookout for new mergers, but during an economic downfall this trend occurs less.

2.3.3 Society

Table 4 - Societal Trends

Context	Key Trend Analysis	Impact	
Societal		**Demand**	**Supply**
Social Media and Technology Innovations:	How tech and social media such as Tik Tok influences younger generations	+ Increase in demand for new innovations and technology in the market such as VR and the cloud as it makes the game more competitive and exciting	+ Increase in production for Virtual reality and the Cloud and leads to more exciting innovations. + Tik Tok ~ leads to thousands of new views - Increase in costs when implementing new innovations in order to compete with other game developers - increase in competition with market who is implement new innovations as quickly as possible

There is an influence of the generations and how the industry adapts to social trends. New innovations in technology allow for more innovations and updates in the online gaming industry: younger generations, such as millennials and generation Z are adapting to the internet and cloud culture that relates to the online gaming industry. The gaming industry is built upon an immediate and fast culture of the technological world, which the generation Z and millennials are more prone to be early adopters of the technology life cycle. Anytime there is a new technological development or app release, especially if it is a good one, the younger generations and any who are gamers will readily adopt the new innovation. (Frankenfield, Jake. 2020).

For the supply side, trends such as Tik Tok and other social media trends must be adapted to as well. Game developers need to be more aware of the fast paced culture younger generations have and utilise these tools. There are ways game developers can “dominate Tik Tok,” by treating everyone using the app as an influencer. Meaning that instead of just trying to acquire numbers like on Instagram, Tik Tok is different in that companies can get viewership from anyone who uploads a video. Every follow on Tik Tok could lead to thousands of followers since Tik Tok.

2.3.4 Technology

Table 5 - Technological Trends

Context	Key Trend Analysis	Impact	
Technology		**Demand**	**Supply**
Virtual Reality Cloud	- VR: Immersive gaming is, "20 times more enjoyable and convenient than traditional gaming"	+ VR is high in demand due to the immersive environment of the game + Increase in demand and sales	VR: - Increase in production costs for new technology + Implementing new technologies allows to stay competitive in the market + Increases creative freedom in game development and better storylines
Cloud	- Cloud: Storage on the internet that allows access to the data and the software programs to run it.	Cloud: + Cost savings, increased productivity, speed and efficiency, performance, and security	Cloud: + Ease of access for game storage, cost savings, increased productivity, speed and efficiency, performance, and security
Blockchain Technology	Allows decentralized asset exchanges, takes out intermediary people and allows for gamers to pay automatically, and ensures, "fast and secure payment networks".	+ Creates ease of access for consumers - Increase in game expenditures	+ Creates ease of access for payment to + More money and players interested in investing in the games + Cryptocurrencies changes the game by allowing traders and investors use their transactions across other blockchains

Trend: Virtual Reality (VR

Virtual reality is increasingly becoming a major part of the gaming industry. Players will spend, “4.5 billion (USD) on immersive gaming,” by 2020 as it is, The leading companies for virtual reality are BigScreenVR and AltSpaceVR, which are accelerating the virtual future more than any market. Due to virtual reality being, “20 times more enjoyable and convenient than traditional alternatives,” it will increase gaming industry sales by a mile fold (Globenewswire).

Trend: Cloud

Cloud in the technology market is run by Amazon Web services and Microsoft Azure. Cloud-based storage makes it possible to save files to a remote database. As long as an electronic device has access to the web, it has access to the data and the software programs to run it. Cloud computing, “is a popular option for people and businesses for a number of reasons including cost savings, increased productivity, speed and efficiency, performance, and security,” (Frankenfield, Jake. 2020)

Trend: Blockchain Technology

Creates ease of access for consumers which will have a positive impact on demand. Blockchains are helpful for gamers, or the end user, as they allow decentralized asset exchanges, which takes out the intermediary person and allows for gamers to pay automatically, and ensures, “fast and secure payment networks”. Supply side: Blockchains have the, “ability for developers to properly monetize their creations.”

2.3.5 Environment

Table 6 - Political Trends

Context	Key Trend Analysis	Impact	
Environment		Demand	Supply
	Environmentally friendly and sustainable products	+ Positive impact on customers and builds a positive relationship between	+ Positive Brand Image - Reduction in mass production - Increase in costs

Environmental factors are related to raw materials and their scarcity and anything else that would affect an industry because of the ecological side, such as pollution. Environmental factors describe factors that would affect industries, "such as tourism, farming, agriculture and insurance," (Academy, Professional), and made companies more aware of their corporate social responsibility (CSR) and sustainability. The online gaming industry is not heavily affected by most environmental factors; however, the question is whether or not game developers are more aware of using more environmentally friendly materials in order to manufacture the products.

There is an article and trend called the, "Console Carbon Footprint," which refers to the sustainability of the products in the online gaming industry. The article explained that there are two dangerous anti-environmental issues that the online gaming industry contributes to, which are, "mass production of physical products which are shipped out to players across the globe, and the second, the lack of energy efficiency in consoles," (Campbell, Maeve. 2020).

Creating a more environmentally conscious brand will increase the costs of production for game developers due to the increase in price for supplying and producing the game console materials. However, the brand will have a positive image and be reciprocated.

2.3.6 Legislation

Table 7 - Legal Trends

Context	**Key Trend Analysis**	**Impact**	
Legislation		Demand	Supply
Law for Game Ratings	The Games Rating Authority (GRA), used the PEGI system to rate games in order to respect the safety of minors playing games if they contain drugs, violence, or vulgar language.	+ Gives purchasing power to parents - if the purchasers are guardians or parents, and makes them more comfortable to purchase games for their children - Decrease in demand for those who wish to buy games but cannot due to ratings	+ Allows for more creative freedom without worrying about how offensive the game is as the rating will take care of that - Game Developers have to follow strict guidelines for each rating - Slows down production if the game does not meet the rating system

Trend: Law ~ Video Game Ratings

Under UK Law, having ratings for video games are mandatory. The Games Rating Authority (GRA), used the PEGI system to rate games in order to respect the safety of minors playing games if they contain drugs, violence, or vulgar language. PEGI stands for the Pan European Game Information, that defines the rating system. A game with a, “PEGI 12, 16 or 18 rating cannot be sold or hired to persons below the respective age bar,” online games that depict violence or have sexual innuendos would have these higher ratings as opposed to PEGI rating of a 3 (*BBC*, 2020).

The PEGI ratings in Europe ensures that parents, who are usually the ones paying, can feel comfortable purchasing games for their children. Giving the consumer the knowledge of the contents in the game has a positive impact on demand as it gives the parents purchasing power. Two out of five parents, " buy their children age appropriate games," and almost half of parents, "let their kids play games that had an unsuitable rating" in a survey conducted in 2015 (*BBC*, 2020).

BE A PART OF HISTORY.

#3 - SUPPLY ANALYSIS

3. Supply Analysis

3.1 Industry Structure

3.1.1 Industry Life Cycle

Throughout an industry's life cycle, total sales go through usually four different phases: introduction, growth, maturity, decline. For the online gaming industry, this is not different.

The online gaming industry has increasingly seen growth, although the industry's growth drivers have shifted segments. In the beginning, it was console and computer-based gaming that boosted the industry, with the rise of advanced and ever improving smartphones, the platforms driving the industry's growth switched. Mobile games are now the most dominant segment, accounting for 45% of the total revenue in 2019 (Jones, Katie. 2020). This segment is particularly strong as it sees no gender gap and places number three in smartphone app categories - right behind social media and shopping apps. The strong growth of the segment falls back on new business models like freemium gaming in combination with in-app purchases, or subscription-based mobile gaming: these loyalty systems keep the players coming back again and can be attributed to the increase in users (Jones, Katie. 2020).

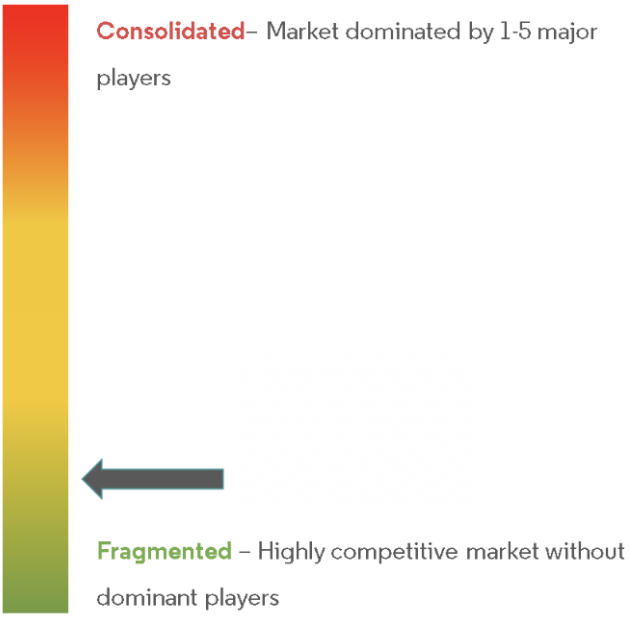
Overall, the online gaming industry finds itself in a late growth and possibly early maturity stage when considering console and PC gaming and, on the other hand, mobile games are on a more advanced stage of maturity. However, at this rate online gaming could stick around as long as people will have devices to play on. The high degree of innovation will further contribute to industry growth, as it leads to improved social interactions with other players, more intense gaming experience with ultra-realistic graphics, or the interaction of players with new tech like virtual reality or cloud gaming.

3.1.2 Degree of Concentration

When analyzing the overall online gaming industry, we can conclude that according to figure 10 it is highly fragmented since there is a big request for online games from users and a growing penetration of smartphone apps across the various regions of the globe. These factors are leading to a powerful rivalry in the online gaming market. Several companies can be identified in all the online gaming segments which contribute to the existence of a highly

competitive market in this industry, for example, the mobile gaming industry, which presents the most fragmentation. However, contrary to what might be expected, the segments of the online gaming industry have considerable levels of concentration, given that they are often dominated by large key players that have a high market share, followed by many small players that their market share is not as relevant - as small producers who launch games occasionally and not the big blockbusters like Fortnite, League of Legends, among others.

Figure 5 - Market Concentration Online Gaming Industry (Mordor Int., 2020)



Mobile Gaming

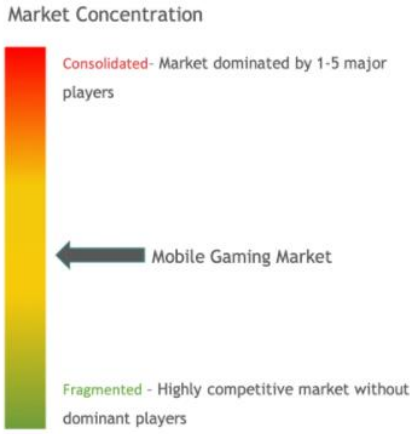
Although still a recent new segment of the online gaming industry, mobile gaming has developed at an astonishing rate. “Part of mobile’s breakneck growth can be attributed to an innovative and seamless user experience which relies on engaging features such as in-app purchases and loyalty rewards.” (Jones, Katie. 2020).

According to App Annie, here are the top 10 mobile games worldwide from 2019:

1. Free Fire (Garena)
2. PUBG Mobile (Tencent)
3. Subway Surfers (Kiloo)
4. Color Bump 3D (Good Job Games)

5. Fun Race 3D (Good Job Games)
6. Run Race 3D (Good Job Games)
7. My Talking Tom 2 (Outfit7)
8. Homescapes (Playrix)
9. Stack Ball (Azur Interactive Games)
10. Call of Duty: Mobile (Activision)

Figure 6 - Market Concentration Mobile Gaming Segment (Mordor Int., 2020)



"The mobile gaming market is competitive in nature because of the presence of major players like Tencent Holdings Limited, Activision Blizzard, Inc, and Zynga, Inc., amongst others. Major companies are developing advanced technologies and launching new products to stay competitive in the market." (Mordor Intelligence, 2020). However, seeing the growth opportunity in the market, companies are entering the market. Being this said, we can conclude that the mobile gaming market is between a consolidated market and a fragmented market as shown in figure 6.

With mobile gaming being more fragmented and the barriers to entry in this segment being lower than console or PC, mobile gaming trends have the capability to change very quickly, and new games can fall down the popularity charts very quickly after an apparently successful release (Boxall, Matthew, 2020).

Console Gaming

There has been a clear shift from 'one hit wonder' games to a more predictable franchise business in the industry, where successful games can grow significantly with each iteration, while generating revenue between launches with additional content updates. A 'Game-as-a-Service' model enables a company to scale down its costs significantly, whilst coupling with micro-transactions can form a key recurring revenue stream.

Major players in the console gaming market are Tencent Games, Sony Interactive Entertainment, Microsoft Studios, Activision Blizzard and EA.

Gaming console is more like a concentrated market, given a set of players dominate in terms of sales. However, there are some producers that develop some games that are successful and sell a lot. Generally speaking, this market is similar to the PC gaming market, given that they have players with a high dimension successively dominating the market.

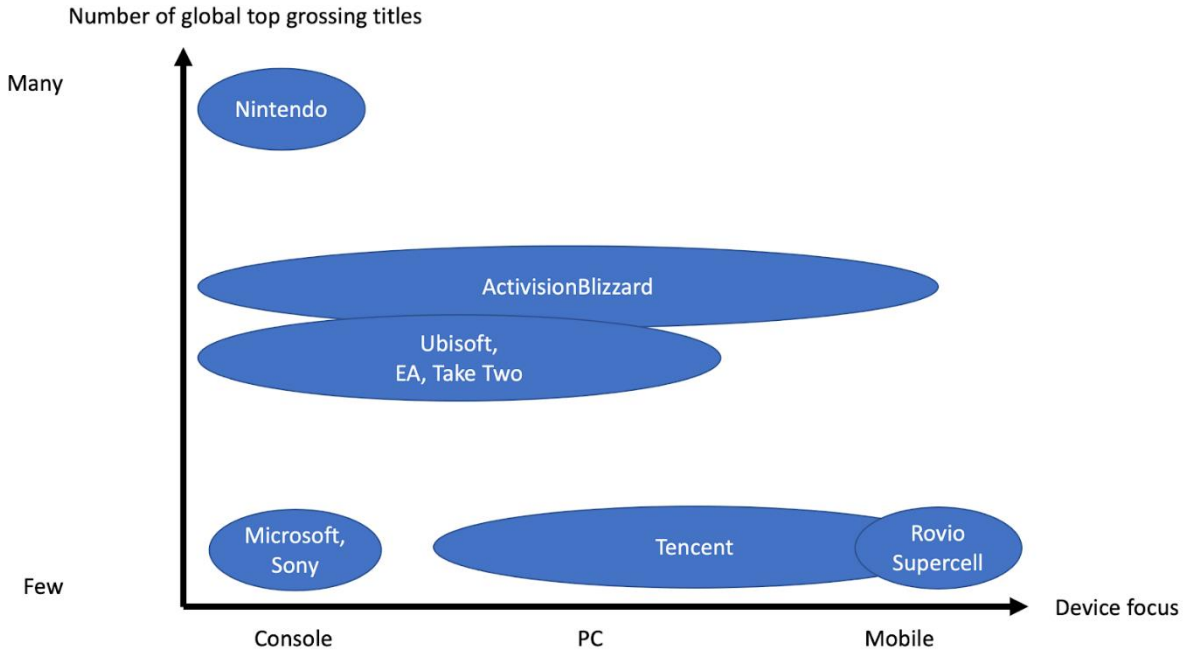
PC Gaming

PC is still the most popular platform for game developers with 56% developing games for the platform in 2020 (*WePC*, 2020). The PC gaming market is segmented by type of genre into action, shooter, sport, role playing, fighting, adventure, racing, strategy and others. The PC gaming market is highly concentrated, with a small number of large players. However, there is a clear trend in the emergence of independent players and startups that seek to challenge the way games are played and their respective platforms, creating launchers specific to the computer. In this sense, in the coming years, there may be a natural tendency for the market to start to become increasingly fragmented and large corporations to lose their already well-defined status.

The top ten competitors in the market made up to 52.8% of the total market in 2018. Major players in the market include Tencent Holdings Limited, Activision Blizzard, Inc., NetEase, Inc., Sony Corporation, Electronic Arts Inc. and others. (Wood, Laura. 2020)

3.2 Strategic Groups

Figure 7 - Strategic Groups



While mapping strategic groups among major game publishers we detected six strategic groups or five if excluding Tencent. The reason to exclude the game publisher Tencent, is that they are not a notable publisher themselves. Tencent owns stakes in prominent developers and publishers in the industry and these companies are not fully integrated into Tencent, which is why it would be reasonable to exclude them. For example, Tencent owns 100% of Riot Games, 84,3% of supercell, 5% of Paradox Interactive, 36% of fat shark, 5% of ActivisionBlizzard, 5% of Ubisoft, 11,5% of Bluehole (PlayerUnknown's Battlegrounds) and 40% of Epic Games.

Sony and Microsoft are two of the most important main strategic groups. Sony and Microsoft are the publishers of major titles that are distributed to other platforms than their own but their main focus is still on games for their own platforms. The main focus of the game publishing operations of these companies is to deliver content to their own platforms which are Xbox and Playstation.

Besides their gaming hardwares, Nintendo is also famous for their game development. Nintendo is the developer of major titles like Super Mario, Mario Kart and super smash brothers. Nintendo is defined as its own strategic group and it is device focused, which they have in common with Microsoft and Sony. What differentiates Nintendo is that they have the

highest number of global top grossing game titles over all the game publishers in the world. Our interpretation is that developing and publishing games are an important strategic focus for Nintendo while Microsoft and Sony just publish games to promote their own hardware.

Microsoft is the owner of many successful game developers due to their large amount of acquisitions. In 2015, Microsoft acquired Mojang with the successful title Minecraft. Recently Microsoft agreed to acquire ZeniMax Media with IPs like Doom, Quake and The Elder Scrolls. Microsoft is looking to extend their strategic focus into publishing and have more of a creative game focus like Nintendo.

The second main group is formed by Ubisoft, EA and Take Two. What these publishers have in common is that they release their titles on a wide range of devices and they also all have a global top grossing title. The main business in this trio is to develop and publish games, which is why ActivisionBlizzard also fits into this group. But since ActivisionBlizzard is also strong in mobile games we decided to make them their own strategic group.

The last main group consists of Rovio and Supercell with a focus on mobile games. Rovio's main IP is Angry birds and Supercell's clash of clans. Tencent is a majority shareholder of Supercell. The main mobility barriers within the sector has to do with the reach of the IPs (titles, intellectual property). Game consumers tend to be fairly focused on gaming on one specific platform. For this reason it can be hard to use an IP that is strong amongst gamers from one platform to gamers on another platform. Probably the easiest route for a publisher to extend its scope to another platform is to acquire a strong IP for that platform. This is probably one of the main drivers behind the strong M&A activity in the sector. A good example of this is when Activision Blizzard 2015 acquired King Digital Entertainment to access strong IPs like Candy Crush.

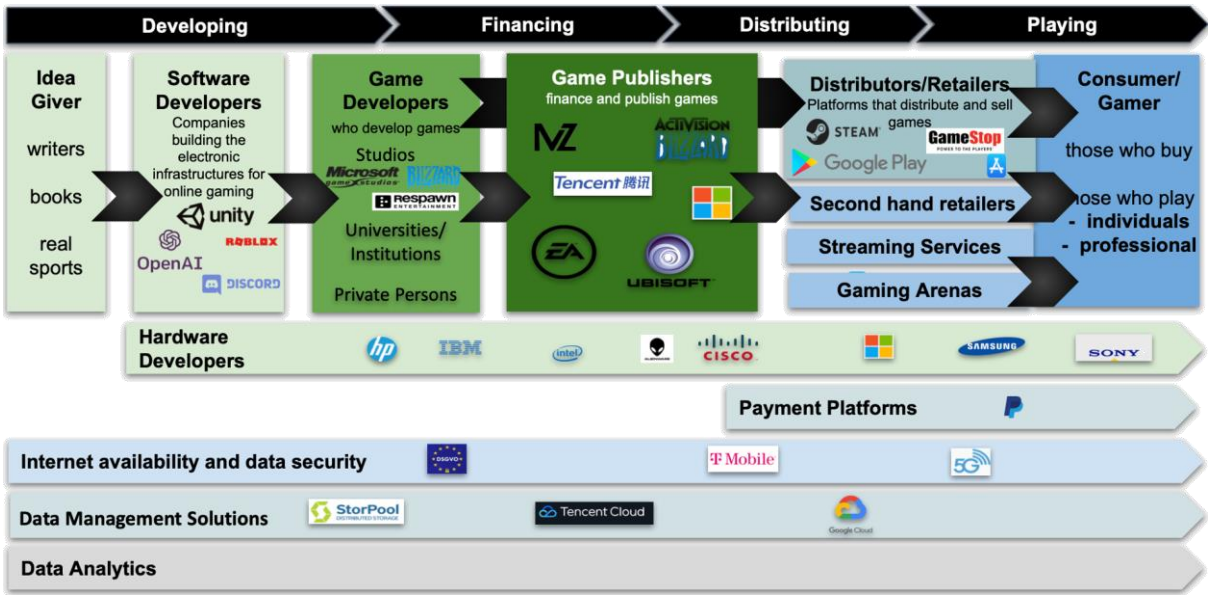
3.3 Industry Value Chain

3.3.1 The Online Gaming Value Chain

The Value Chain of Online Games is quite complex due to the various options of who develops games and the fact that the choice of the platform where games are played becomes more and more irrelevant due to the trend of Cloud Gaming. The here described Value Chain

shows the way of an online game from developing it based on an idea to being published, sold and played by professional and individual end consumers, placing the big Game Publishers in the center of the Value Chain.

Figure 8 - Online Gaming Industry Value Chain



I. The Idea Givers

Online Games can be based on literature or cinema, directly referring to specific stories from books, novels, short stories, series or movies. Also very common is the occurrence of legendary characters from tales and mythologies such as gods, half-gods or other mythical creatures. Another important idea giver for Online Games are real historical events such as wars or the history of a specific country. Also based on real life are sports games such as FIFA, imitating a real world's soccer league and championship.

II. Software Developers

When playing an online game, movements and landscape characteristics are already so real that it is easy to forget that we are in the middle of bits and bytes or 0 and 1. This is due to the constant development of game engines, the software used to write games. Each game is built upon several lines of code, often even several thousand. Software Developers provide Game Developers with better tools to make it easier for them to create games and also make it more accessible to private- and hobby-developers. The most common game engines are Unity and Unreal Engine nowadays.

III. Game Developers

A game developer can be a person or organization, deciding on how a game will look and feel like. They are responsible for the game's overall storyline and development companies basically have Designers, responsible for the look and feel, and programmers who write the code accordingly. A game development team's job starts with creating a game concept and ends with the finishing details on gameplay. Game developers can be distinguished in three categories: indie, in-house, large-scale, and third-party.

Indie developers are teams or organizations that focus on smaller games and often just work on that single game or a small amount of games. It is important to acknowledge that small games can be not only developed by companies, but also by individuals, meaning any private person. This is shown in the Value Chain above as the continuous, long arrow that goes from the developers straight to the distributors meaning that there is no Game Publisher involved. The most popular example is the game "Minecraft", which nowadays belongs to Microsoft but originally was developed by Markus "Notch" Persson who put in the majority of the time and effort to produce the finished game on his own. The small games developed by individuals or very small development companies occur more and more, especially in the rising mobile online game segment.

The second category are in-house developers, meaning that the big Game Publishers have their own development subsidiaries. Good examples are Microsoft Games Studios and Sony Interactive Entertainment, dedicated to developing games for Xbox or PlayStation.

The third category is third-party developers, meaning that a game publisher like EA or Ubisoft hires a third party development company to work on a game. This is what is shown in the Value Chain above, saying that the Game Developers are basically a supplier to the Publishers. In this relationship, the developers are not as free in their creative work since they are the executors of the publishers vision and goals. An example of a third-party development company is Camelot Software Planning, a Japanese company often contracted by Nintendo.

The fourth category is Large-scale developers with thousands of employees globally working on different games for multiple platforms. Often, these companies are popular for one game that is very popular and therefore needs a lot of manpower to be operated successfully.

Successful large-scale development companies are Riot Games (f.e. League of Legends), Epic Games (f.e. Fortnite) and Blizzard Entertainment, which nowadays is known as Activision-Blizzard (f.e. World of Warcraft). These companies started as small development startups and became so successful with one or more games that they grew up to be not only developers but also Publishers. We see that often Game Developers and Game Publishers are the same company, because they either historically grew up to be publishers or due to vertical integration, like it f.e. happened to respawn Ltd. being acquired by EA in 2017.

IV. Game Publisher

Game Publishers are taking the tasks of funding, marketing, distribution and public relations of a game. These companies are also the companies commonly related to a game because they usually show up on the start-up screen of a game.

Game Publishers can be separated into different parties by analyzing for which platforms they publish games and how they are related to these platforms. For example, Sony (PlayStation) and Microsoft (Xbox) are First-Party Game Publisher whereof Electronic Arts (EA), Ubisoft or Activision Blizzard are Third-Party since their games are published independently on the platform, which can give them a broader audience regarding the total number of players. Many modern online games can be played on several different platforms which require Third-Party Game Publishers (*Gaming Street*, 2019).

V. Distributors/ Retailers

For a long time, the main distribution channel of games were offline game shops, where games were sold in physical form of CD's. MediaMarkt, Saturn or Best Buy should be mentioned here, however, the most popular company is GameStop, an American video game, consumer electronics and gaming merchandise retailer with more than 5000 stores throughout the United States, Canada, Australia, New Zealand, and Europe as of February 1, 2020 ("GameStop". *Fortune*. Retrieved December 2, 2018.). Reacting to digitalization, they nowadays also offer an online store where games can be bought and sent to one's home. Still, GameStop is experiencing decreases in sales due to the more and more common way of digital distribution of (online) games.

Digital distribution means selling games as digital content, without the exchange or purchase of physical media. In simpler terms, games are downloaded into the device. This way of distributing games by offering it as downloads has become increasingly important with ongoing digitalization and younger generations being the major consumers of online games. This digital distribution happens on platforms like Steam (Valve) or Origin (EA), which were initially founded by game publishers to offer updates and downloads of their own brands, and then started to extend the offer through third party games.

These platforms sell console and PC games and online games. Steam platform hereby is the largest digital distribution platform for PC gaming, with 75% of the market space in 2013 (Edwards, Cliff (November 4, 2013). "Valve Lines Up Console Partners in Challenge to Microsoft, Sony". *Bloomberg*. Archived from the original on October 24, 2014. Retrieved November 5, 2013.) By 2017, users purchasing games through Steam totaled roughly US$4.3 billion, representing at least 18% of global PC game sales (Bailey, Dustin (March 22, 2018). "With $4.3 billion in sales, 2017 was Steam's biggest year yet". *PCGamesN*. Retrieved March 22, 2018.) By 2019, the service offered over 34,000 games.

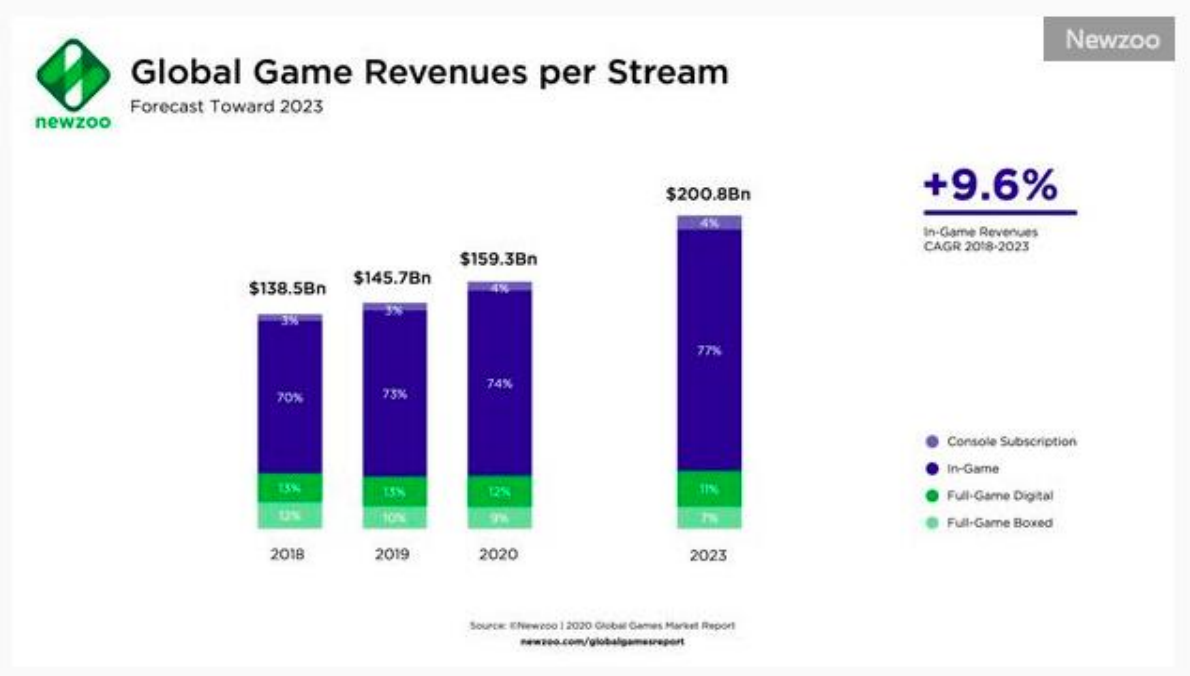
Besides online games for consoles and PC, there is the huge and massively growing mobile online games segment that has its own digital distribution channels, Google Play Store for Android apps, App Store for Apple apps. In general, developers publish their games on both platforms. Online mobile games enable players to participate in the game through a smartphone or tablet. The increase in network connectivity, mobile data performance and digital technologies like stronger processing and graphic chips drive the segment’s growth. According to Newzoo’s predictions, the $63.2 billion games app revenues in 2018 will have been 76% of all app revenues, leaving just $23.9 billion (27%) for non-gaming apps, which shows that the retail of mobile games through Google Playstore and Apple Store makes a huge part of online games retailing (Newzoo Global Games Market Report 2020 | Light Version).

Another distribution channel to be mentioned is the aftersales market of online games, divided into physical second-hand markets and in game purchases. Second hand platforms are f.e. eBay, where especially antiquarian and famous games are traded as rare goods at high prices. The extremely relevant in-game sales market, which is defined by all purchases that are made by a consumer while playing the game, meaning sales that are generated after the game

itself is purchased.

For mobile games, in-app sales is the major business model, offering the games free-to-play and generating revenue with in-game sales (Freemium model). This means mobile games are offered free now and revenue is only created by purchases customers are making within the game for real money. Free games create a high user base and popularity and thereby also customers are attracted which are willing to pay for additional features. Google Play Store and iOS App Store generating both more than 90% of their revenue with In-App-Purchases. An additional revenue stream is also advertisements which are placed within the game. Advertisers pay game producers per show of their advertisement or per click (Wurmser, Yoram. 2020.)
According to the latest report from Newzoo, in-game purchases are still the main source of income for games, with 74 per cent of the $159.3 billion in revenues in 2020 (Ghost, Semir Omerovic. 2020).

Figure 9 - Global Game Revenues per Stream (Newzoo.com, 2020)



VI. Streaming Services

Game Streaming Services stream games directly to the gamer's device of choice. This way of gaming is known as "cloud gaming", which is possible due to cloud servers that allow players to be able to play games smoothly and for a reduced price. Since the cloud technology is evolving in the last couple of years, cloud gaming is a new way of gaming and gets more and more attention. For a gamer being able to use game streaming services, strong internet connectivity is required and a platform/device needs to be used that supports streaming services. For example, PlayStation has an exclusive streaming service called PlayStation Now: But the most popular services are twitch.com and YouTube Gaming. Both services have a subscription based business model, supported by advertisement. What makes the use of Streaming Services popular is the fact that the actual game title is stored at the Services servers and just broadcasted to the user's screen, meaning that the user has the same experience independently from the quality of the device he's playing from.

VII. Gaming Arenas

The online gaming industry is a highly competitive scene, almost every game is based on the principle to win against opponents, some as a team, some as single-player. Competitions are a logical inference, these are mostly called leagues or tournaments in the industry. Tournaments can be online but as well in-person tournaments where gamers and spectators come together in a stadium are frequently common. Gamers are watched like at any other sport event and are celebrated and cheered like normal athletes. These stadiums are so-called Gaming Arenas where the leagues are held. Few Gaming Arenas exist which are dedicated to Esports only and these are mostly small regarding the size. Famous and big tournaments are held in football stadiums or exhibition halls, again similar to traditional sport events. The 'Intel Extreme Masters Katowice 2017' (Poland) could attract an impressive amount of 173.000 live spectators and over 46 million online spectators.

VIII. Hardware Developers

At the beginning of the gaming industry strong hardware components were a crucial part to have smooth game flow. With the strong improvements of hardware characteristics over the last years, this aspect lost on priority. However, hardware components in the PC sector still play an important role in the industry regarding prestige and image. Also nowadays gaming improvements can be archived by better hardware components but these are often in the range

of milliseconds and will only make a real difference for professionals. The console sector is a bit different organized and it often requires to have the latest console to be able to play the newest games which give an additional incentive to buy the newest hardware. For the mobile gaming industry, most of the common devices comply with modern game requirements and no specific gaming hardware developments exist.

IX. Internet Availability and Data Security

As we have seen in the discussion about the key parts of the Value Chain, the internet is an important requirement throughout the whole Value Chain, beginning with the game development on platforms like unity, to buying and downloading games as digital content on platforms like Steam. But the most important role of internet performance regarding the customers experience is while actually playing the game. Online games by nature need the connectivity to a Cloud and the other players, and for a good experience the connection needs to be strong and stable. Especially for the further growth of the Mobile Gaming market, the accessibility of 5G is extremely relevant.

With connectivity and cloud based solutions there comes the discussion about data security, especially private data of gamers. The European DSGVO came with regulations for online game developers and publishers as well as streaming services. According to heise online, several small game companies prefer to switch off their online games in Europe instead of making the changes required by the basic data protection regulation (Herbig, Daniel. 2018) . "The main difficulty lies in the fulfilment of documentation obligations", explains Dr. Christian Rauda, who works at the GRAEF law firm as a specialist lawyer for IT law, among other things. "One must have implemented a data protection management system. You have to specify which data you collect and process and for what purpose. In addition, one must determine when data is deleted. In addition, one has to summarize one's IT security measures in a document and adapt one's data protection regulations". To align the online games with these expectations and rules isn’t it worth for every game developer. All players in the Online Gaming market need to be aware and act according to data security regulations to keep up with the forecasted growth.

X. Data Management and Analytics

The gaming industry has the beneficial characteristic that data acquisition is very easy for analysts because all the data is already digital and data gathering can be made automatically almost ever. This helps to get insights about the customer base and their habits but also brings up the issue of Data Management. It is common to use cloud-solution to bundle this information from all players over the world and analyze it from there.

XI. Payment Services

Payment platforms are the necessary intermediates that make transactions on online distribution platforms like steam or gamestop possible. Especially companies like Paypal make online distribution as easy as it is, making purchasing on demand side and monetization on supply side easy and fast.

3.3.2 Identifying areas of coopetition

The gaming industry is characterized by several big players which often take the role of multiple entities. For example, Microsoft has its own gamer publisher but is as well a game developer with 15 further subsidiaries and divisions, besides the fact that they are also producing their own gaming console, the Xbox. This vertical integration leads to coopetition with other horizontally aligned firms on different vertical levels. The game publisher EA, for example, produces games for the Xbox and uses the platform from Microsoft which makes them cooperate, but at the same time compete, since both firms produce games for the Xbox. This phenomenon can be seen with-in several companies in the gaming industry. Sony and Nintendo also started with a pure cooperative relationship but ended up to be competitive with the time. This makes this industry coopetitive in several areas (Hamouti, Rhizlane. 2012).

Another area of coopetition is the role of the game developers within the value chain. On one hand, they can cooperate with game publishers, by either being in-house developers of the publishers or serving them as third-party. On the other hand, as discussed above, there are developers that finance and publish by themselves and therefore are competing against the games of the big game publishers.

3.3.3 Dynamics in the Value Chain

The online gaming industry is evolving since the 1970s with experiencing substantial growth in the last two decades due to increasing internet accessibility and performance. Hence, it can be called a very dynamic industry in many aspects.

One key dynamic in the value chain that can be observed is the occurrence and massively grown importance of the mobile gaming segment. Previously, (online) gaming was owned by a few companies, but in the last decade, digital companies such as Apple and Google, not originally from the gaming industry, have built up a high relevance due to their online games sales earnings from their app stores. Mobile gaming as a pastime is attractive to many people who basic games like Angry Birds earned $200 million only in 2012 (Chikhani, Riad. 2015)

This also leads to another dynamic in the Value Chain, basically at the end of it, meaning the gamers themselves. The mobile games boom opened the doors to a new generation of gamers. Actually, gaming has become so integrated in our daily lives and our culture that nowadays old people, kids, women and men play right next to each other and especially with each other. According to techcrunch, more than 42 percent of Americans are gamers (Chikani, Riad. 2015).

A third observed Value Chain dynamic is regarding the game developers. It started to become normal to build and publish games as a private person or small teams of individuals that become as successful and popular as games developed and published by the big players like EA, Tencent and so on. The “Minecraft” example from earlier is just one out of many examples and especially for mobile games it can be a trend observed that “everyone can develop successful games”. This is supported by increasing accessibility of easy-to-understand open-source development software and platforms such as Twine, Bitsy, or RPG Maker and more focus on programming in schools and universities. Another supportive factor is the very easy publishing infrastructure via app stores and open platforms at low costs which leads to low entry barriers regarding the game publishing and selling.

Regarding possible future dynamics, it can be possible that due to the more and more evolving Cloud Gaming technology the Hardware Developers (especially consoles and PCs) experience a decrease in bargaining power since with the possibility of having the same high-quality gaming experience independent from the device played on, it will probably be less important if one has the newest PlayStation or not.

3.4 Digital Transformation

The online gaming industry, taking into account its core business and its main consumer value proposition, is a highly digitalized industry, belonging to the quaternary sector. “The gaming, console manufacturer, and mobile application industry has undergone a phenomenal change in the past five years, dominated by new technology advancements and the continuous penetration of the internet and smartphones in emerging economies,” (Sutherland, 2017).

Since 1970, the video game market has undergone a profound restructuring. Firstly, with the appearance of consoles and equipment that would allow gamers to have an even better experience, but above all with the appearance and growth of the Internet.

Recently with the emergence of mobile gaming, the word "flexibility" gains an extraordinary weight in the online gaming industry, given the countless capabilities that arise with the constant interaction anywhere with the consumer. At the same time, constant innovation and the creation of ways to stimulate interaction between players: real-time chat, new and multiple ways for players to play in community and, above all, the creation of the feeling of community that gives rise to the emergence of new concepts such as competitions, tournaments and events specific to gamers.

An extraordinary example of the growing digitization of more traditional sectors and companies is traditional games like Bingo. “Bingo has been enjoyed in the physical world for decades where it was known for a great night out. The social side was just as important as winning a prize and that’s a factor that online bingo games had to work hard to replicate” (Shillberg, Jack. 2020).

The creation of this type of online games urges the growing digitization of the games industry. More and more games are increasingly adapted to the online world and allowed to be exported anywhere in the world in a fraction of a second. “Classic board games also offer examples where physical play has failed to compete with innovation. Titles such as Monopoly and Scrabble are still being made but online versions exist, and they are proving to be exceptionally popular. The original version will always have its followers but, by placing the game online, it develops in the digital age and sales continue to boost gaming industry revenue” (Shillberg, Jack. 2020).

Another highly interesting example is the way in which other industries are relating to online games and diversifying their sources of income. The world of competitive sports is shifting toward the digital landscape with the rise of eSports gaming and competitions. Whilst the industry is still in its early days in western society, those who are getting into eSports early are reaping the benefits of a young, fast-growing, freshly tapped space.

“What is interesting about eSports is when you start to compare the market/industry to that of the football (soccer) leagues. Global players and the formation of teams will lead to the creation of player/team management companies who will control licensing, sponsorships and apparel deals with major brands” (Leonares, Dil-Dominé Jacobe. 2015).

The emergence of new technologies has made the consumer increasingly demanding, forcing the online gaming Industry to be agile, people-oriented, innovative, customer centric, streamlined, efficient and constantly looking to innovate and provide new tools to its consumers. “Players are increasingly tech-savvy and demanding, providing a bottom-up pressure on operators in the gaming industry to keep up-to-date with new trends and technology” (BtoBet Ltd. 2017).

Table 8 - Digital Characteristics of the Online Gaming Industry

Performance	Online Gaming Industry
Formulation	***Disruptive***: Companies with different approaches within the industry itself, with different objectives and disruptive strategies to reach the player.
Execution	***Agile:*** Companies have different ways to implement their strategy, often creating Beta tests to collect feedback and develop a new approach to the market. Being necessary to be highly adaptable to meet the needs of the customer.
Adequacy	***Change***: Highly dynamic industry, requiring constant innovation and looking for new technologies. Being highly influenced by consumer behavior trends.
Customers	***International*** ***Youth***: Customers from all over the world however with a higher incidence in young people and younger generations.
Communication	***Omnichannel:*** More and more communication with the consumer is within the game itself, by email, phone, among other digital channels. Mostly, companies have physical customer support structures to contact them.
Convenience	***Very*** ***High***: The online gaming industry has a 24/7 network capable of responding to the needs of consumers in different geographic areas.
Assets	***Low***: Most of the assets that companies have are centralized on servers and cloud services.
Scalability	***Very*** ***High***: Vast information networks and networked services, allowing the need for servers to increase as the player base grows.
Data	***Highly*** ***Integrated***: Automatic collection of player information and their respective style of play, allowing the analysis of different information, such as session time, most played games, most used players, among others.

"The video game industry has become the great unicorn of the COVID-19 crisis. According to a report recently published by consulting firm Newzoo, that specializes in gaming and e-sports, this industry will grow 9.3 percent by the end of 2020 compared to 2019 and will end the year with US$159.3 billion in revenue." (González, Daniel. 2020).

Regarding Unicorns, there are currently some that are revolutionizing the Online Gaming Industry.

Table 9 - Unicorns and their estimated 2020 revenues (Owler, 2020)

Kabam	**Roblox**	NIANTIC	KRAFTON	EPIC GAMES
Est. Annual Revenue: $1.2 billion	**Est. Annual Revenue:** $589 million	**Est. Annual Revenue:** $900 million	**Est. Annual Revenue:** $1.1 billion	**Est. Annual Revenue:** $4.2 billion

Kabam

The company creates, develops and publishes massively multiplayer social games (MMSG's) such as Marvel Contest of Champions and Transformers: Forged to Fight for mobile devices. The company has focused on developing "real games," or games with immersive gameplay mechanics akin to more traditional MMOs with an emphasis on the spending and gambling of virtual currency. The company is from the United States of America.

Roblox

Is an online game platform and game creation system that allows users to program games and play games created by other users. This is a perfect example of Covid-19's impact on the industry, given its rapid growth in the year 2020. Roblox is free-to-play, with in-game purchases available through a virtual currency called "Robux". The company is based in the United States of America.

Niantic

Is an American software development company based in San Francisco. Niantic is best known for developing the augmented reality mobile games Ingress, Pokémon Go, and Harry Potter: Wizards Unite. Developer of an augmented reality platform intended to enrich mobile gaming experiences. The company's offerings include game development through exploration

and face-to-face social interaction, enabling users to see the world with a new perspective and to play together with friends and family in games that span and unite the entire planet.

Krafton

Is a South Korea-based video game developer for PC and mobile devices company that develops fantasy MMORPG games. Game Union includes PlayerUnknown's Battlegrounds (PUBG), TERA, Devilian, and Bowling King are some examples of games developed by Krafton.

Epic Games

Is an American company that stands out for being an interactive entertainment company and provider of 3D engine technology. Epic operates Fortnite, one of the world's best known games (over 350 million accounts and 2.5 billion friend connections); it develops Unreal Engine, which powers the world's leading games and is also adopted across industries such as film and television, architecture, automotive, manufacturing, and simulation. Epic provides an end-to-end digital ecosystem for developers and creators to build, distribute, and operate games and other content through Unreal Engine, Epic Games Store, and Epic Online Services.

#4 - STRATEGIC ISSUES

4. Strategic Issues

4.1 Business Models in the Online Gaming Industry

The online gaming industry and its value chain offer a variety of business models. However, there is a clear trend to freemium gaming, away from traditional one-time payments, leaving some game studios behind while leading others to success. For a holistic view of the industry, all parts of the industry value chain are included in the table, however, only the most relevant players and aspects are closely looked at in terms of their business models.

The value chain is split up into basic software developers, game distributors, hardware and device manufacturers, game publishers, and game developers. The last two are the most important ones in the industry, because they are actually creating the online games.

Table 10 - Business Models in the Online Gaming Industry

Intervenient Models	Total	Freemium	Subscription	Advertising
Software developers	Microsoft, unreal engine	Discord, Google, Apple	Microsoft Azure, AWS, Google Cloud	
Game developers	2k gaming, Blizzard, Crytek, firefly, Gameloft	Riot games, Supercell		
Game publishers	EA, Nintendo, Ubisoft, Tencent, Rockstar	Epic Games,	Epic Games	Apple, Google, Facebook
Distributors	Steam, Game stop, best buy/electronic shop	Steam	Google play pass	Online and print ads
Hardware developer	Sony, Microsoft, Samsung, Apple, LG		Playstation Plus, shadow gaming, Google Stadia	TV, online, print

4.1.1 Software developers

While online gaming was by no means a new concept, “Neverwinter Nights”, the first online game to also offer a proper GUI and a graphical representation of different environments for players to explore and coexist in, was released in 1991. It was just the beginning of the

success of Massive Multiplayer Online (MMO) games with the release a few years later of "World of Warcraft" that became a very popular game in the world.

These persistent virtual worlds were accessible by monthly subscriptions, providing the developers of these games with a continuous stream of income. At the same time, players started buying and selling virtual items of the games with real money, developing an economic system that could be compared to other countries. It was estimated that in 2002 "Everquest" was the 77th richest country in the world in terms of GDP. (need to make sure about this).

In 2010, World of Warcraft reached a subscriber base of 12 million players, making Blizzard one of the most profitable software development companies in the world. The growing popularity of MMO games to be played online via subscription models was the first big event to shake the traditional boxed game sales business.

4.1.2 Game publishers and developers

Going to the store, buying a game, and then playing it online with your friends. That has been the standard way for most players in the past. With the internet, you could eventually buy games online and download them to your device, via steam or other retailing platforms - the business model did not change much except the point of sale. Game developers and publishers did, and still do, use this pretty straight business model for their titles. Because they go hand in hand with their business model, they are both represented in this text section. Good examples are Mojang's Minecraft, Need For Speed from EA, or simulator games. However, in recent years studios like Rockstar, EA, or 2k gaming added in game purchasing options. In FIFA and NBA there are pack-openings where one pays a certain amount for a mystery box of players, in GTA 4 there is an in-game currency to add new cars and guns to your collection that can be stocked-up with real money. This adaption of the traditional business model leads to additional revenue streams for the developers.

Most popular games today are freemium games - across all platforms. League of Legends, Fortnite, Among Us are three examples of very successful games that are free to use and therefore address a big player base. All of them monetize via in game purchases; a different skin for your champion in League of Legends, a new dance of your character in Fortnite, a

funny hat for your astronaut in 2020 hype-title Among us. Players want to differentiate from each other, and this is what successful online games offer to them.

However, there is another type of freemium game that is especially popular for mobile games: pay-to-win. The games are highly controversial for a good reason. They are typically rather simple and just barely fun - unless you spend money on them. The games consist of a never ending loop:

Explore → Collect → Spend → Improve

When introducing the concept of experience points and waiting time, the idea of micro payments can be used to make money in each of these four steps to speed them up. For example to avoid waiting long hours until new troops are recruited, a building is upgraded, or new areas within the map can be explored. This type of freemium mobile online game can be broken down into five steps:

1. Entice the player with a simple game loop
2. Create visual stimuli for the players whenever they do something in the game
3. Train players to spend in game currency to make progress
4. Offer a way to exchange real money for the in game money to avoid players thinking about losing real money when spending in game
5. Make the game about waiting, but make the player do micropayments for not to wait

After playing a while, the waiting time for making any type of progress within the game increases. It is key for the business model that the game becomes just barely fun from a certain moment on, so that players have a reason to make micropayments for making it more fun again. Here comes the most controversial part of the business model: only a very small percentage of players ever pay anything for the game. From the bespoken point on, they usually stop playing it and eventually delete the game from their phone. However, for the game it is all about finding the heaviest users and exploiting the addiction they have successfully created; that is how just some players spend thousands of $USD on a very simple game that is itself barely worth anything. The target group - kids - is not aware of this threat, and beyond, it is very sensitive. From time to time, there are reports of kids spending their parents money excessively on in-

game currency (Taibi, Huffington Post, 2013, or Kleinman, BBC, 2019). A famous example for these games are those developed by Supercell, Clash of Clans or Clash Royale, which are very popular. In 2018, developer and publisher Supercell had a total revenue of 1,8 billion US$, a good proportion assumingly from people with addiction problems (Handelsblatt, 2019). However, it is reported that the developer and publisher of countless online games misses the leap into the modern times (Handelsblatt, 2019).

4.1.3 Distributors

Games can be distributed in two ways - digital copies and physical copies. Digital copies only exist digitally and can be bought through online platforms such as Steam or PSN, while physical copies come with the game disc and can be bought from the retailer stores.

Physical copies are distributed in the following sequence:

Publisher → Distributor → Wholesaler → Retailer → Player

Most of the retailers get their stock from the wholesalers but they could also get them directly from the distributor. Digital copies only involve the publisher, distribution platform (eg: Steam, PSN, Google Play Store, App Store) and players:

Publisher → Platform → Player

This way, the publisher will be able to get more involved in deciding the price or sales method for their digital copies. However, digital copies usually come with lesser privilege compared to physical copies. (if a game is delisted from this platforms you cannot download it again in the future).

An example of a distributor is Steam, being one of the first platforms offering digital distribution of video games. It works as a hub for users where they can purchase games from many different developers, being one of Steam's objectives attracting new game development companies so they have more sellers on the platform and therefore attract more users. Steam operates on a commission-based business model, where it takes a percentage cut from all the sales made on its platform. Steam also leads the way in the freemium model by offering games to play for free instead of just offering games that you buy once and download it on your computer.

4.1.4 Hardware developers

The traditional business model for gaming has been the console. In short, companies sell their gaming console at cost (or tight profit margin) while making money by selling games that work in that console. Although companies might not be making money by selling consoles, due to low-priced hardware devices, they sell high-priced games following a razor and blade business model (selling the primary product at a low price while complementary goods get sold at high margins). The most known companies producing consoles are Sony, Microsoft and Nintendo. Their respective consoles were, and keep being a success in the entire world, allowing game developers to sell their games being compatible with these consoles.

Also, not only consoles are focused on games nowadays, but also mobile devices and computers are being designed specifically for gaming, or at least taking into consideration. Razer is one example, as its hardware includes high-performance gaming laptops. Building on that, Razer also provides its customers with mikes, audio devices and keyboards designed with high quality and made for gaming, to increase the whole experience of playing video games. When we look at mobile devices, we can talk about RedMagic, which produces cell phones ideal for gaming and not so good for other things. Adding to the increase in gaming with mobile devices, there are being created gamepads where you can fit your phone and play on your phone like you were playing in a console.

4.2 Strategic Issue: Products - Markets Matrix & Blue Oceans

The products markets matrix is focused on what you sell to whom, in other words, which product is targeted to what specific target market. With the objective of transporting the reality of the methodology to the industry under analysis, we sought to create a division of the market through the "products" that can be created by the game development companies and the respective platforms where they can be played.

The division was formed in respect to the four primary platforms of video game consoles, mobile games, personal computer, and handheld devices, and the nine types of multiplayer games that can be seen in the key below.

Table 11 - Game Terminology Key

FPS	**A first person shooter (FPS) is a genre of action video game that is played from the point of view of the protagonist. FPS games typically map the gamer's movements and provide a view of what an actual person would see and do in the game.**
RTS	**A game that bases its primary game mechanics on military-style strategy, resource and base management, and indirect control of units, played in a real-time setting.**
MMO	**A type of multiplayer online game that supports a large number of simultaneous players. The number of players varies from a few hundred to several thousand.**
MMORPG	**A MMO that uses role-playing game (RPG) mechanics such as character customization, turn-based combat, exploration, quests and group-based adventuring.**
MMORTS	**A MMO that uses real-time strategy game (RTS) mechanics such as military-style strategy, resource and base management, and indirect control of units.**
MMOFPS	**A MMO that uses first person shooter (FPS) mechanics.**
MOBA	**Multiplayer Online Battle Arena (MOBA) originated as a subgenre of the real-time strategy (RTS) genre of video games, in which a player controls a single character in one of two teams.**
SandBox	**A SandBox is a style of game in which minimal character limitations are placed on the gamer, allowing the gamer to roam and change a virtual world at will.**
MMOS	**A massively multiplayer online game having primary mechanics based on SandBox games.**

Products - Markets Matrix of Multiplayer Games

Table 12 - Products-Markets Matrix of Multiplayer Games

Multiplayer Games Types	Platforms			
-	Video Game Consoles	Mobile	Personal Computer	Hand Held Device
FPS	***	*	***	**
RTS	*	**	***	*
MMO	***	*	***	*
MMORPG	***	*	***	
MMORTS	*	**	***	
MMOFPS	***	*	***	
MOBA	**	**	***	*
Sandbox	***	**	***	*
MMOS	**		***	

	No Attractiveness
*** *Strong Presence*	High Attract.
** *Medium Presence*	Medium Attract.
* *Weak Presence*	Low Attract.

Each type of multiplayer game corresponds to a broad set of games, developed by different companies on many platforms. Some with more success, others with less success. In this sense, the objective of the analysis was, in view of the most successful games, to understand the set of platforms and the economic valuation arising from the decision making of the launch of a certain type of game and platform.

More complex game types are still best played on computers and consoles that has to do with the processing capabilities of the microprocessors and the graphic boards in computers and consoles, however mobile phones are improving fast and there will be a lot of improvements in this field.

In view of the analysis carried out using the matrix below, we can conclude that:

1. Multiplayer games tend to have a very strong presence on the computer, assuming an impressive scale and highly profitable economic performance in different types of games. However, it is a highly competitive market.
2. Strategy games on consoles tend to have less performance and presence when compared to other platforms. For example, in mobile strategy games associated with rounds and playing simultaneously tend to have an excellent performance. However, it is an area with strong growth that has not yet been fully explored in order to provide a multiplayer experience;
3. Hand held devices are one of the least used and economically favorable platforms for creating specific games for this platform. Given the lack of growth in its use, as well as in the greater creation of specific content for other platforms with larger communities;
4. Shooting and role playing games have a tendency to be widely used on computers and consoles, just as there are several "blockbusters" with countless success.

List of some Example Game Types

FPS	Quake 2, Unreal Tournament, Counter Strike, Battlefield, Call of Duty, Tribes:Ascend; M.A.G.
RTS	Command and Conquer; StarCraft; WarCraft; Homeworld.
MMO	Eve Online; GTA V.
MMORPG	Fortnite; Ultima Online; EverQuest; World of Warcraft; Guild Wars; Rift; Elder Scrolls Online.
MMORTS	Shattered Galaxy; Battle Pirates; War Commander; Tiberium Alliances.
MMOFPS	Planetside; Firefall; Defiance; Global Agenda.
MOBA	League of Legends; Defense of the Ancients; Smite; AirMech.
Sandbox	Minecraft.
MMOS	Trove; Roblox.

Market Segmentation Matrix: Paid vs. Free Games and their Platforms

Table 13 - Market Segmentation Matrix: Paid vs. Free Online Games and their Platforms

Pay vs. Free	Platforms			
-	Video Game Consoles	Mobile	Personal Computer	Hand Held Device
Free to Play	*	***	***	*
Pay to Play	***	**	**	***
Freemium	*	***	***	**

	No Attractiveness
*** *Strong Presence*	High Attract.
** *Medium Presence*	Medium Attract.
* *Weak Presence*	Low Attract.

Market segmentation was created to highlight the disparity in the offer by platform and whether the game is free or not for the user. Through segmentation it is concluded that both the use of computers and mobiles are more expressive in both paid and free aspects. However,

there is a greater discrepancy in consoles and handheld devices because creating games for these platforms has much higher costs and is difficult to monetize.

In addition, in recent years, there has been a trend towards the creation of business models that are freemium, allowing users to use the games for free and only being necessary to pay for exclusive content. The freemium model offers users the core product — the game — for free and then optionally charges them for premium content such as in-game currency, extra content, or customizations, (Jacobs, Harrison. 2015).

Although it is clearly a trend on mobile and computer, given that there are more and more successful games on these platforms such as: Candy Crush Saga to Clash of Clans for mobile and League of Legends on the computer. On consoles, it is still an area not very explored and with few games - Warframe, DC Universe Online, among others - , despite being a trend, however, nowadays, games like FIFA 2020 are paid and have in-game purchases to increase the player's performance, however, are actually paid and not freemium.

Demographics Matrix

Table 14 - Demographics Matrix

Platforms	Generations			
-	Gen Z	Gen Y	Gen X	Baby Boomers
Video Game Consoles	***	**	**	*
Mobile	**	***	***	***
Personal Computer	***	**	**	**
Hand Held Device	**	***	***	*

	No Attractiveness
*** *Strong Presence*	High Attract.
** *Medium Presence*	Medium Attract.
* *Weak Presence*	Low Attract.

This generation of ‘digital natives have not experienced a world without video games, “Gen Z,” is mostly known for its global connectedness, having been born into the technology era and being entrenched in the digital world since the moment they became aware,” which is something teenagers can take full advantage of (Mobile Marketing, 2020). Generation Z,

"represents 14 percent of mobile gamers, according to a recent report by Tapjoy, and 27 percent of all gamers," (Duran, H.B. 2017).

Currently, Generation Z & Y are one of the generations that most use different platforms to play online games, being one of the main users and most profitable. In contrast, baby boomers present themselves as the smallest users of most platforms, but of the main users of mobile, however, they are the least profitable and least avid in the consumption of the multiplayer market.

4.2.1 Blue ocean ~ How Traditional Gaming Companies Enter Markets with Less Competition

Machine Zone

Blue Ocean strategies are when companies venture, "into unexplored spaces" and have a new idea that is void of competition in the market. It is a hard break out of the traditional market otherwise known as red ocean strategies that have a lot of competition. Machine Zone was a traditional console gaming company swimming in a "red ocean of competition", but when it launched their mobile game, Game of War, in 2013 it became, "immensely popular and immensely profitable" (Freidman, Howard. 2018). This is an example of how traditional gaming companies can alter their strategy to enter a market with less concentrated competition.

Machine Zone focused on building a "worldwide closed community to be controlled in order to maintain a higher user experience," (Freidman, Howard. 2018). The CEO, Gabriel Leydon referred the company to a, "real time Facebook network and an added game," on top of it, (Freidman, Howard. 2018). This worldwide strategy was brilliant as it opened the game to new, "noncustomers," who would not have been interested in the game before when there were language barriers, but now can play without restrictions. The worldwide collaboration strategy incorporated a, "universal translator" with 32 languages that would translate the player's text automatically without any extra effort from the user. Machine Zone created a cross-cultural gaming experience and social aspect that increased the value of the game by a mile fold, even though the costs increased.

Since the cost to develop the game increased due to the, “universal translators,” and tapping into worldwide markets, Machine Zone reduced costs in other areas of development that reduced the traditional components of the game. This means that instead of having highly developed artificial intelligence, it was just, “people playing people,” which increased the social aspects of the game. The CEO stated that, “getting people into an alliance is more important than getting money,” as it makes players who are a part of an alliance more reliable on the other person and gives them an incentive to stay in the game and pay more money (Freidman, Howard. 2018).

Machine Zone’s blue ocean strategy created a cross-cultural gaming experience with translating languages and taking away the traditional gaming aspects making it one of the highest grossing games. It used a, “freemium business model that charges for supplements,” ensuring a steady stream of revenue. The social component of the game, “drives players to purchase these supplements to enhance the value of the software,” (Freidman, Howard. 2018). Game of War is an example that even in highly concentrated markets with high competition, game developers can break out and into a blue ocean by using different strategies such as cross-cultural ones.

Virtual Reality & Augmented reality

Games with VR and AR are bursting into the blue ocean strategy because they are creating a new type of demand. This is similar to how Nintendo had, “blue ocean strategic moves” with the DS and the Wii when the games, “started expanding into the US after Wii was already a hit in Japan,” (Pratap, Abhijeet. 2016). Augmented reality (AR) refers to the perception of the real world and an extension of this perception by the integration of virtual aspects. Images of the real world are displayed on smartphones or data glasses and texts or other images will be inserted (Augment, 2016).

Virtual reality, as known today, is the computer-generated simulation of a 3D environment that can be accessed via the use of a headset. Within this environment, commonly, the player can perform physical interactions using extra hardware such as body tracking sensors or controllers. Due to the VR interactivity, the market that popularized Virtual Reality is the gaming industry since video games are the most interactive form of media (Markopoulos, Evangelos. 2019). Virtual reality starts to gain blue ocean characteristics as more people and

organizations try to adapt their work and function in a virtual world, hoping to be the first ones to do this successfully, efficiently and effectively.

Augmented reality, unlike Virtual Reality, takes place in the real world and simulates the addition of 3D computer-generated elements within reality. As of today, augmented reality applications are much less interactive than Virtual Reality since they cannot use any advanced sensory hardware. Due to that, most Augmented Reality experiences are portable, affordable and very easily accessible by using smartphones as their preferred platform. Two very successful AR experiences are Pokémon Go and Ingress with significant contribution to the AR popularity (Markopoulos, Evangelos. 2019).

The innovation of the VR technology and its areas of application can create experiences with significant success and impact the economy and the society and form blue ocean markets. Today's VR early stage, in corporate and serious games, can impact existing markets and generate new ones. Disruptive technology, or disruptive innovation is an innovation that, "creates a new market and value network," which in turn disrupts any existing markets by, "displacing" already established market-leading firms (Ab Rahman, Airini; et al. 2017). In existing markets, VR is becoming this disruptive technology that goes beyond existing and competing companies.

VR technology checks the basic boxes for mainstream adoption: cheap, wireless, highly visible and widely available in the usual places, and it is seen as user-friendly. VR is also uniquely suited to blue-ocean strategies. Up until VR, new technology has continually marched toward greater distraction and interruption of daily activity. (Freidman, Howard. 2018).

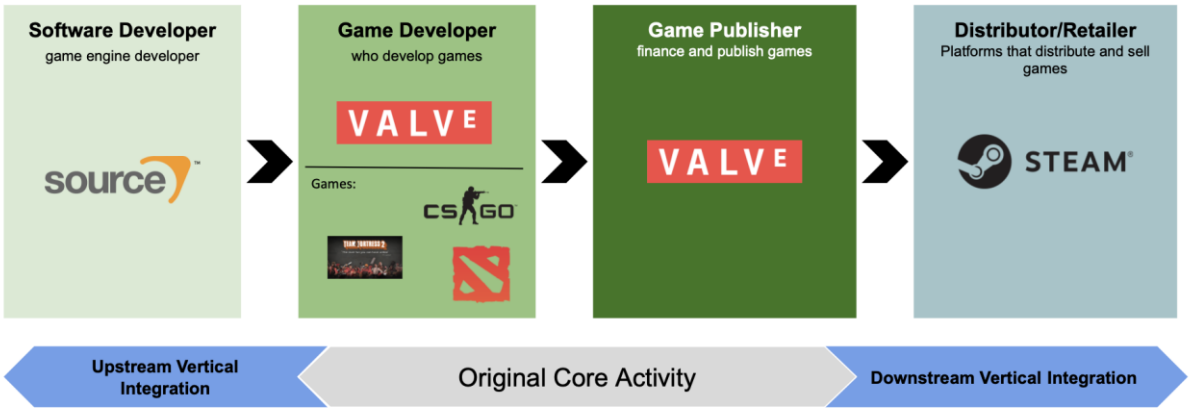
Virtual reality and augmented reality accomplish two very different things in two very different ways, despite the similar designs of the devices themselves. VR replaces reality, taking you somewhere else. AR adds to reality, projecting information on top of what you are already seeing. They are both powerful technologies that have yet to make their mark with consumers, but show a lot of promise (Greenwald, Will. 2018).

The future of the online gaming industry may largely involve scaling up the adoption of these new technologies, with some companies trying to create a first mover advantage. Thus, the use of the blue ocean strategy associated with the use of these new technologies has been causing disruption in the market and in the implementation of new games that seek to create new types of users.

4.3 Strategic Issue: Vertical Integration

Vertical integration occurs when there is a concentration of enterprises within a line of business, extending the firm's power over a specific part or to the totality of the production process (Harrigan, K. R., 1985). As the online gaming industry developed during the recent times, both upstream and downstream vertical integration was observed across the entire industry (Williams, 2002). Online video games have 47 percent that are made by an integrated developer (Gil, R., 2015). This type of strategy produces many benefits for online gaming publishers (Van Rooij, 2009). In fact, by adopting an integrated value chain, companies in the online gaming industry are able to better coordinate the multiple stages and, therefore, obtain economies of scale and economies of scope.

Figure 10 - Valve's Vertical Integration



Valve is an interesting example of a player within the gaming industry that is vertically integrated. The company develops games, publishes them and then distributes them on their own digital platform called Steam. Valve also develops their own game engine which is kind of the software where games are based on.

4.3.1 Software developers

One important link in the gaming value chain is the development of software's that is used in game development. These software's could either be tools to create graphics like Adobe Photoshop or Autodesk Maya. Or it could be game engines which is a kind of framework of code that could be used as a template to later build the game upon.

Examples of successful game engines are Unreal engine by epic games, Source by Valve, Unity, Amazon Lumberyard and Microsoft XNA. Some of these engines like Source and XNA are free to use for developers while some like Unreal engine and Unity have a licensing model based on the users revenues.

4.3.2 Game Developers

As it was previously mentioned, game developers are responsible for the execution of a wide array of tasks: from creating the overall storyline of a game to the finishing details on gameplay. Companies located at this stage of the online gaming value chain opt to develop integrated game workplaces to benefit from some of the advantages of vertical integration. It is quite usual to observe an integration between the game production ("game developers") and the game publishing ("game publishers"). In fact, it is possible to observe this scenario in some companies of the online gaming industry such as Valve Corporation. This American gaming company, besides offering services in the online game development, is also present in the publishing and distributing stages of the value chain.

4.3.3 Game Publishers

The task of game publishers is similar to the one of record labels in the music industry. Game publishers take care of the whole process of taking the finished games to the market. They make a plan for distribution. Signs contracts with the distributors. They often set the prices. And they market the games. It is also very common that game publishers finance the games when they are under development. A common arrangement is that game developers that often do not have any revenues when they are in the prerelease phase, are pre-paid royalties from the publishers. The developers in that way get cash to finance the development of their game and the publisher gets the rights to a promising IP.

Most major publishers are integrated game studios that do both development and publishing. Examples of these integrated studios are Activision Blizzard, Ubisoft, EA and Take Two. These 4 publishers' original business is to publish games but with time they have bought developers that they have been working with.

An interesting game publisher is Valve. They are in all steps of the gaming value chain. They have their own game engine Source. They are also in game development with successful titles like Counter Strike, Half Life and Dota 2. They are also their own publishers and distributors with their extremely successful online platform Steam.

4.3.4 Distributors

Games are distributed to end consumers mainly through physical stores (for example gamestop) or entirely digital through online platforms. There are also online sales of physical copies of games. The share of games sold through online platforms have increased to such an extent that the entire model of selling physical games is questioned. On PC Valve’s Steam is probably the most important platform. Epic Games, the creators of Fortnite, has set up their Epic Store to challenge the dominance of Steam. If Epic Store will manage to take important market shares from Steam are yet to be shown.

The console manufacturers have their own monopolies on their platforms. Microsoft's Xbox has Microsoft Store, Sony’s PlayStation has PlayStation store and Nintendo’s Switch has Nintendo game store.

For mobile games the situation is similar to the one of consoles. Apple has a monopoly of games for the iPhone with App Store and Google has a monopoly on Android with Google Play.

One example of the adoption of this strategy (backward vertical integration) can be seen in the acquisition of the Swedish game developer Dice by the game publisher Electronics Arts in 2006. With this, the companies were able to combine both personal experience and know-how that allow them to develop a series of successful online video games such as Battlefield series.

4.4 Strategic Issue: Mergers & Acquisitions and Alliances

The Fair Play Alliance is a global coalition of gaming companies and professionals that are committed to the development of quality games. Through a forum, companies can work together to achieve the shared vision of intentionally evolving how games are made, facilitate learning and coordination, prioritize inclusivity and safety, uphold the spirit of the game and promote the value of power dynamics (Fairplay Alliance, 2020).

The Blockchain Game Alliance (BGA) encourages game developers to use blockchain technology in the gaming industry by highlighting its potential. Furthermore it also gives a place for collaboration, sharing knowledge as well as developing common standards in the industry. Members of the alliance are companies like Ubisoft, Matic Network and AMD (*Blockchain Game Alliance*, 2020).

4.4.1 Alliances

Game Developer & Media Firms - Media Firms often build alliances with game developers to further increase their product range and thereby to attract an additional customer cluster. An example therefore is Disney and Pixar by building alliances to get their movies like Toy Story, Star Wars, etc. in the gaming scene. Nintendo & DeNA - both companies will develop and operate new game apps based on Nintendo's IP, including its iconic game characters, for smart devices. This alliance is intended to extend Nintendo's reach into the worldwide market of smart device users as well as complement the company's dedicated video game systems business.

Nintendo and DeNa, focusing on their long-term relationship, have also agreed to form a capital alliance (2015), where Nintendo acquires 10% of DeNA's treasury shares and DeNa, simultaneously acquires 1,24% of Nintendo's treasury shares.

4.4.2 Partnerships

Sony & Microsoft - joint development of new gaming, Sony using Microsoft's Azure data centers for streaming gaming and content services, working together on AI-powered Sony smart cameras (Sony semiconductors, Microsoft AI). The main goal of working together is to deliver more enhanced entertainment experiences for their customers, worldwide, while

building better development platforms for the content creation community.

Activision Blizzard & Google - Activision Blizzard runs online games on Google Cloud servers. Players will be offered optimal personalized interactions, as Activision Blizzard can tap into Cloud's AI tools to offer recommendations for differentiated gaming experiences and in-game offers.

4.4.3 Mergers & Acquisitions

Activision Blizzard (developer of games such as Call of Duty and Guitar Hero) acquired all shares of King Digital (developer of Candy Crush) in the year of 2016, for a price of $18 per share (resulting in a $5.9 billion deal), turning it into the largest game network in the world with more than 500 million users. The acquisition of this highly complementary business further positions Activision Blizzard for growth across audiences, platforms, business models and genres.

Sony made a $250 million investment into Epic Games (developer of Fortnite), granting it a minority share of the company. "Through our investment, we will explore opportunities for further collaboration with Epic to delight and bring value to consumers and the industry at large, not only in games, but also across the rapidly evolving digital entertainment landscape" (Kenichiro Yoshida, President and CEO of Sony).

READY. SET. PLAY.

#5 - STRATEGIC SCENARIOS

5. Strategic Scenarios

5.1 Assessment of International Markets

The assessment of the international markers is crucial to identify the relative attractiveness of a specific region or country. In what concerns the online gaming industry, three different nations were chosen (China, United States and Japan) due to their importance to game development and consumption. In order to properly evaluate these countries, five different dimensions were considered: sales evaluation, growth assessment, margin evaluation, risk assessment and sustainability assessment. Table 15 presents the scores of the three nations in each of these groups. Furthermore, it is possible to understand that China is the most attractive market when compared with the United States and Japan (scored 6.13 points). Nonetheless, all three regions obtained similar final results.

Table 15 - Global Assessment of International Markets

Factor	Weight	China	USA	Japan
Sales Evaluation	20%	1,52	1,30	1,31
Growth Assessment	30%	1,64	1,30	1,10
Margin Evaluation	25%	1,58	1,46	1,72
Risk Assessment	15%	0.97	1.31	1.17
Sustainability Assessment	10%	0.42	0.73	0.64
Global Assessment	100%	6.13	6.10	5.94

5.1.1 Sales Evaluation

Table 16 - Sales Evaluation

	Weight	China	USA	Japan
Sales				
Market Size in Volume	8%	10	9	8
Average Price Level	5%	5	4	4
Access to the Distribution Network	4%	6	6	6
Cultural Proximity	2%	8	4	8
Other Sales Factors	1%	7	6	7
Sales Assessment	**20%**	**1,52**	**1,3**	**1,31**

Regarding the sales evaluation (Table 16), different aspects were taken into consideration. Looking at the market size of online gaming, China is the one with the highest value (10), followed by USA (9) and Japan (8). These three countries are the ones with the highest market size in volume in the world. The average price of games is higher in Japan and USA while in China games seem to be cheaper, and the access to games are equal among these three countries. Related to cultural proximity, the Asian countries have a higher score (8) compared to the USA (4) since tournaments such as Esports of League of Legends are held in these countries among other games. With all these aspects combined, China obtains the highest score (1,52) and USA and Japan score lower with very similar results (1,3 and 1,31 respectively).

5.1.2 Growth Assessment

Table 17 - Growth Assessment

	Weight	China	USA	Japan
Growth				
GDP Growth Rate	7%	7	3	2
Population Growth Rate	8%	4	5	2
Market Growth Rate	10%	7	4	6
Openness to International Trends	4%	2	6	4
Other Growth Factors	1%	5	5	4
Growth Assessment	**30%**	**1,64**	**1,3**	**1,1**

Next, when we look at the growth assessment, we observe that the GDP growth rate is much higher in China (7) compared to the USA (3) and Japan (2), and in all three countries the population is growing relatively slow. Regarding the market growth rate, we can observe that China is the country with the higher growth (7) being followed by Japan (6) and the USA (4) respectively, and although China is growing faster, when we look at the openness to international trends, China scores the lowest with 2 while USA scores 6.

The growth assessment is clearly higher in China (1,64), being the country that is growing faster as a whole and also in the gaming industry, while Japan is a country growing slower between these three with the lowest score (1,1).

5.1.3 Margin Evaluation

Table 18 - Margin Evaluation

	Weight	China	USA	Japan
Margin				
Access and Cost of Labor	5%	9	6	7
Access and Cost of Qualified Technicians	10%	5	7	8
Cost of Land, Materials and Equipment	2%	9	5	7
Distribution Margin	2%	7	4	6
Financial Costs	2%	7	3	4
Barriers to Imports	1%	1	3	8
Legal Regulation	1%	4	7	6
Bureaucracy	1%	5	8	3
Other Margin Factors	1%	7	4	6
Margin Assessment	**25%**	**1,58**	**1,46**	**1,72**

Margins represent an important aspect when evaluating the attractiveness of a specific region to the online gaming industry. In this domain, Japan is the leading country with a score of 1.72 points, followed by China with 1.58 and, in the last spot is the United States with 1.46 (Table 18).

One of the most important factors is the level of the qualification of the human force. In fact, a high proportion of experienced individuals are located in the Japanese territory. Nevertheless, the United States also scored a relatively high score in this dimension since most of the top video game design schools are located in America.

The access and cost of labor is another crucial aspect in the evaluation of margins. In this case, China has a clear advantage due to their abundance of low-wage workers.

5.1.4 Risk Assessment

Table 19 - Risk Assessment

	Weight	China	USA	Japan
Risk				
Foreign Exchange Risk	5%	7	9	8
Political Risk	5%	8	10	9
Competitive Risk	4%	4	7	6
Other Risk Factors	1%	6	8	8
Risk Assessment	**15%**	**0,97**	**1,31**	**1,17**

Additionally, in order to properly understand a country's attractiveness it is also important to evaluate their risks. In regards foreign exchange risks, all three regions scored high values (Table 19) since their currencies have remained fairly constant and with reasonable volatility.

Furthermore, according to Credendo's database, all the regions in analysis scored low values regarding short-term and medium/long term political risks. In terms of competitive risks, China scored a relatively low score when compared with the other regions due to their lack of measures to protect intellectual properties and their inefficiency to deal with copycats situations. All of these aspects allowed the United States to obtain a position of advantage with lower risk assessment (obtaining a higher score than the remaining countries - 1.31 points).

5.1.5 Sustainability Assessment

Table 20 - Sustainability Assessment

	Weight	China	USA	Japan
Sustainability				
Environmental Sustainability	4%	4	7	6
Social Sustainability	3%	5	8	7
Governing Sustainability	2%	4	7	7
Other Sustainability Factors	1%	3	7	5
Sustainability Assessment	**10%**	**0,42**	**0,73**	**0,64**

In what regards the assessment of sustainability (Table 20), the United States and Japan scored pretty similar results (0.73 and 0.64 points, respectively). Both countries are increasing their actions and measures to minimize the environmental issues. Moreover, when analyzing social sustainability it is important to take into consideration the RobecoSAM Country Sustainability Ranking. This framework focuses on distinct factors such as aging, corruption, institutions, and environmental risks that enables an effective measure of this variable. According to this metric, Japan and the United States scored positive results in relation to the remaining countries.

On the other hand, China scored 0.42 points on the sustainability evaluation. Besides the implementation of several measures to combat the environmental issues (such as the Clean Air policy implemented in 2013), still several Chinese urban cities continue to dominate the top spots of the most polluted towns in the globe.

5.2 International Competitiveness

The United States is the largest game producing country in the world. Japan could be considered the second most important game producing country. We thought it would be interesting to compare the competitiveness between these two countries as game producers. We used Michael Porter's national competitiveness diamond as model for our comparison. After this comparison follows our mapping of sector cluster for the online gaming industry as well as the regional cluster of London as a game producing region.

5.2.1 National Diamond Model

5.2.1.1 USA

Table 21 - Porter's National Diamond: USA

Elements	Comments
Factor Conditions	Industry employment: **57,060**, as of 2019, Skilled labour (gaming developers) Number of video game software developer students **2,322** video game locations across the country
Demand Conditions	US have a large population corresponding to 328,2 million people About 11,6% of US population play video games more than 20 hours/week Market penetration is expected to reach 44.4% by the end of 2020
Related & Supporting Industries	US companies strong in all links of the game industry value chain Software developers (Epic games, Autodesk), Game Developers & Publishers (EA, ActivisionBlizzard, Take Two), Distributors (Valve, Apple, Google, Microsoft) US companies also strong in movies and TV
Firm Strategy, Structure & Rivalry	**High competition** (EA, Rockstar, ActivisionBlizzard, Epic Games) forces companies to **develop** unique and **sustainable strengths** and **capabilities**
Chance	COVID-19
Government	Net neutrality laws, PEGI rating for online games, Government regulation for addiction

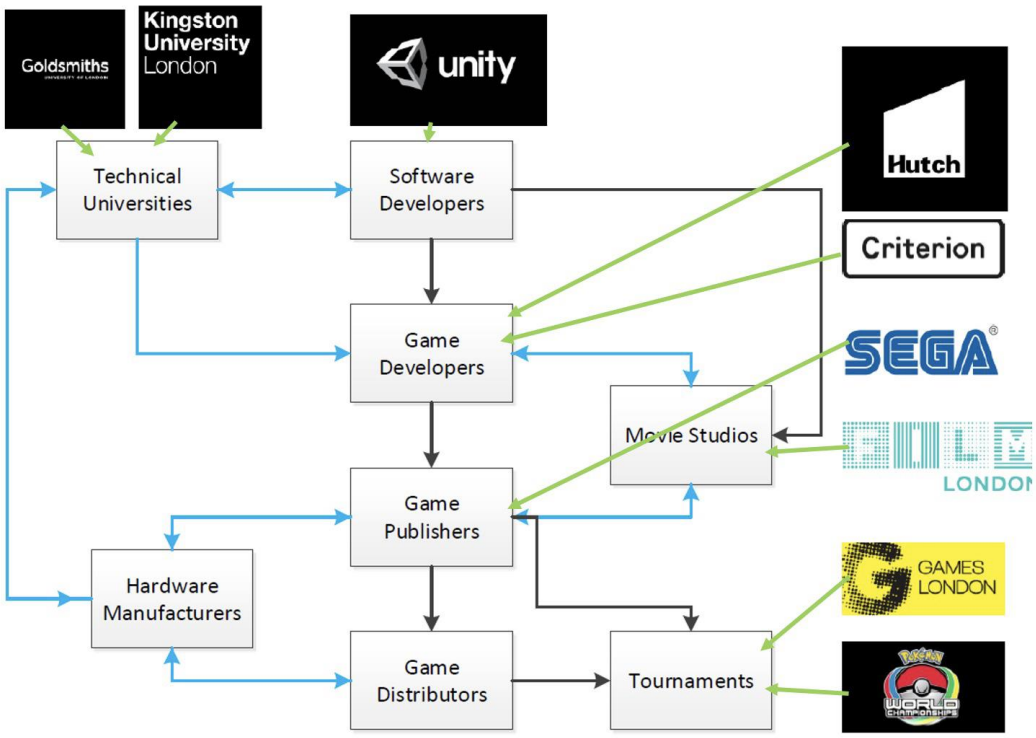
5.2.1.2 Japan

Table 22 - Porter's National Diamond: Japan

Elements	Comments
Factor Conditions	Strong domestic technical industries, Founding country of Sony, Nintendo and Sega
Demand Conditions	Japan also has a large population corresponding to 126,5 million people Around 27% of Japanese population plays games Market penetration is expected to reach 64.9% by 2025
Related & Supporting Industries	Japanese companies strong in hardware Nintendo, Sega, Sony (Playstation and Xperia) Good technical universities (University of Tokyo, Tokyo Institute of Technology, Kyoto University)
Firm Strategy, Structure & Rivalry	**Companies highly vertically integrated** (Sega, Nintendo and Sony)
Chance	COVID-19, neighboring South Korea has a strong gaming industry which can lead to a push for Japan
Government	Due to the postponement of the Olympic Games 2020 the government is pushed to over its residents an alternative and e-sports is thereby frequently mentioned

5.2.2 Sector Clusters

Figure 11 - Sector Clusters



Black arrows represents supplier relationships; blue arrows represents that the industries are dependent; the graph was enhanced by the real world example of London, UK.

We have identified 4 other sectors that form a cluster together with the gaming value chain.

Technical universities fosters the talent needed for software and game developers. Technical universities also use software's from software developers. Software developers and game developers use the research from technical universities in their own development.

Hardware manufacturers also have a strong relationship with publishers and distributors. Especially on mobile and console hardware manufacturers have integrated horizontally into being game distributors. For example Xbox's Microsoft store or iPhone's app store. Hardware manufacturers also share some competence and research with technical universities.

Movie and TV studios are also related with game developers and publishers since they in many cases licenses their IPs to become games. The licensing sometimes goes the other direction with games becoming movies. Many modern movie and TV studios are also using many of the same animation software's as game developers.

The event industry around game tournaments also has an obvious relatedness with game publishers and distributors.

5.2.3 Regional Clusters

The online game industry uses most frequently online distribution for their products. However, there are still regions where a high proportion of game development companies can be found. The biggest hubs are in Tokyo, London, San Francisco, Austin and Montreal. This can particularly be seen in the number of game developers in these regions and the countries overall. To better understand the worldwide distribution we created a world map with the distribution of the 11 countries with the highest number of game developer companies indicated by a color beam from dark blue to light blue.

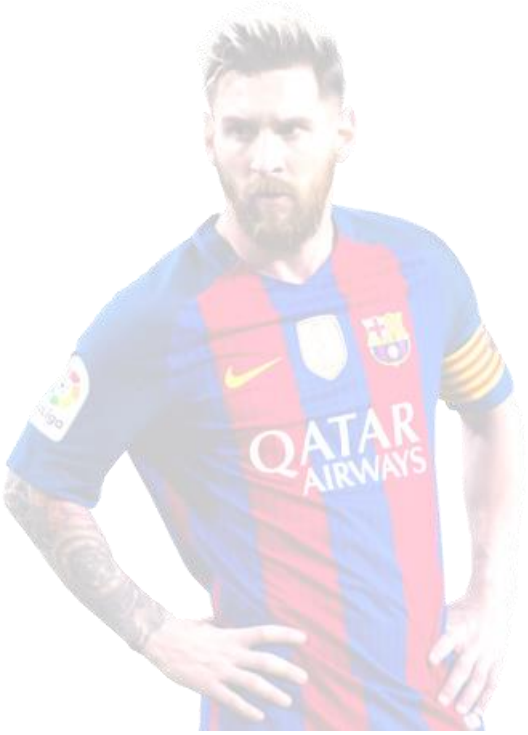
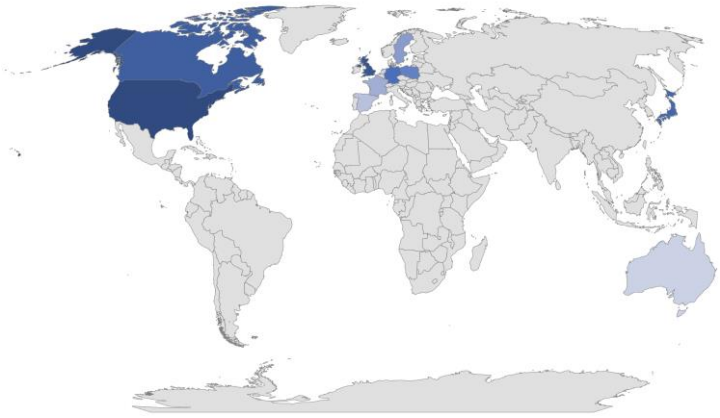


Table 23 - Regional Cluster regarding number of Game Developer Countries (gamedesigning.org, 2020)

Country	Game Developers
United States	684
United Kingdom	178
Canada	154
Japan	94
Germany	93
Poland	58
Sweden	56
France	55
Spain	52
Australia	49
Netherlands	49

Figure 12 - Regional Clusters (gamedevmap.com, 2020)



5.3 Strategic Scenarios

5.3.1 Challenges for the Future

The online gaming industry is a rising and fast changing industry. Therefore, it holds lots of opportunities for innovative players and new entrants that can keep up with the pace of the industry development and changing trends. However, it also holds lots of risks for those that do not adapt fast enough, do not observe the market well enough, or invest into wrong assets. Moreover, external factors like a bad internet connection can influence the rise of the industry badly. This is already the first of six upcoming challenges for the online gaming industry:

Comprehensive broadband and mobile network expansion

As online games become more advanced, it is crucial that the internet connection is good enough to process data fast enough. A bad internet connection cuts a huge amount of potential players out of the market, whether it is the local network connection at home or the 4G network for mobile phones. This is not only an external issue that addresses internet providers, the game publishers as well need to make sure that they consequently invest into a next generation server infrastructure for their online games.

Entertainment industry substitutes

Competition comes not only from inside the online gaming industry, there are also other substitute products that threaten the player base size of online games. For example, Netflix or YouTube are also competitors of online gaming, because they are also entertaining a similar customer group. In the future, players will more than ever have to choose between playing an online game or watching something online: their favorite Youtuber, a good Netflix show, a gaming stream on twitch. “Netflix, in its Q4 2018 Shareholder Letter, stated “We compete with (and lose to) Fortnite more than HBO”. This signifies that the video game trend is growing, and is competing with, and taking share from, all other major entertainment industries.” (TEAM)

New gaming gadgets

Virtual reality and augmented reality are two of many buzzwords that have been around for some time now. It is not clear yet if and how players of online games accept this tech and are willing to integrate it into their gaming behavior. It is clear however that this technology holds major opportunities for changing the entire gaming experience efficiently by adding new dimensions to gaming. It will be a challenge for future developers and publishers to come up with just the right mix of using new tech/gadgets and existing gaming infrastructure to an extent that the majority of players will adapt to. Right now, VR and AR online games are still just a small niche.

Business model changes

As of right now, the freemium business model is one of the most successful ones in online gaming. However, it is also subject to constant change as it is still quite new to the market. Therefore, the freemium business model landscape from today will look quite different in a few years from now, requiring publishers to constantly review and adjust their games to these changes. If they fail to do so, a very sensitive and unforgiving player base can diminish rapidly. It can be expected that we see lots of different styles of business models in freemium online gaming in the upcoming years, the few that will assert will almost certainly lead to greatest success of the online games.

Cyber security

In-game payments are not rare in online gaming, especially the popular freemium business model benefits from online microtransactions. Hence, lots of players give away their own or their parents bank details to make these small payments. Therefore, the genre becomes attractive for hackers that will in the future increasingly target the weak spots of online game's cyber security. It will require a good amount of investment to keep the player's data safe and secure to not lose reputation because of large scale hacks or data leaks.

Online gaming addiction

The majority of online game players are of a younger age, this customer group is more sensitive to addiction and excessive game use than adults are. As more and more players get into the thriving market, it will be a future challenge for game publishers to keep the number of addicted players low and prevent them from establishing from unhealthy online gaming behavior.

5.3.2 Strategic Scenarios

The future holds different scenarios for the gaming industry. As of right now, the industry is growing, paving the path of success for many industry players. In our scenario matrix we decided to also take a closer look on what would happen if the existence of new markets stopped, combined with scenarios of introducing new technology to the players.

	New gaming markets	**Same gaming markets**
Ability to explore new technologies	**Scale** Investments into new technologies addressing a growing player base in new gaming markets *VR, AR & Cloud Gaming*	**Experience** Use technology to enrich the online gaming experience *Artificial Intelligence and Deep Learning for a better gaming environment*
Inability to explore new technologies	**Diversify** Need for diversification and to invest in markets in the value chain *Investing in esports, digital content and diversification to leverage the users base growth*	**Improve** Further investments into existing tech and business models *Freemium business model opportunities, mobile gaming versions of popular games, cross-platform gaming*

Investments into new technologies addressing a growing player base in new gaming markets

VR, AR & Cloud Gaming

As audiences continue to grow, it is clear that the technological possibilities of online gaming are endless such as VR, AR & Cloud Gaming creating new markets and products. Due to the various advancements in the gaming industry, the significant technologies which are earning a lot of market attention are Virtual Reality (VR), Augmented Reality (AR), and Extended Reality, i.e., Mixed Reality (MR).

For an avid gamer, nothing could be more exciting than the prospect of being transported inside the game, battling demons, aliens, and spies, exploring amazing environments beyond imagination (Mordor Intelligence, 2020).

The two technologies, AR and VR collectively, have already created scenarios that once seemed impossible, by years of innovations. For instance, products like the Oculus Go will allow users to download games, apps, and other experiences right from their phone and sync the games to the headset, eliminating the need to connect it to a VR-ready computer, which was required by Oculus Rift (Mordor Intelligence, 2020).

Figure 14 - Oculus Rift

Figure 13 - Oculus Go

Furthermore, the increasing adoption of mixed reality in gaming technology in amusement parks and military training is likely to stimulate the application of mixed reality in the gaming industry. For instance, the large theme parks in developed countries such as the U.S. are making hefty investments to integrate mixed reality in gaming technology to provide an immersive gaming experience. Brand name theme parks are also investing to design and develop mixed reality in gaming technology-based theme parks.

Figure 15 - VR Theme Park (xd-cinema.com, 2020)

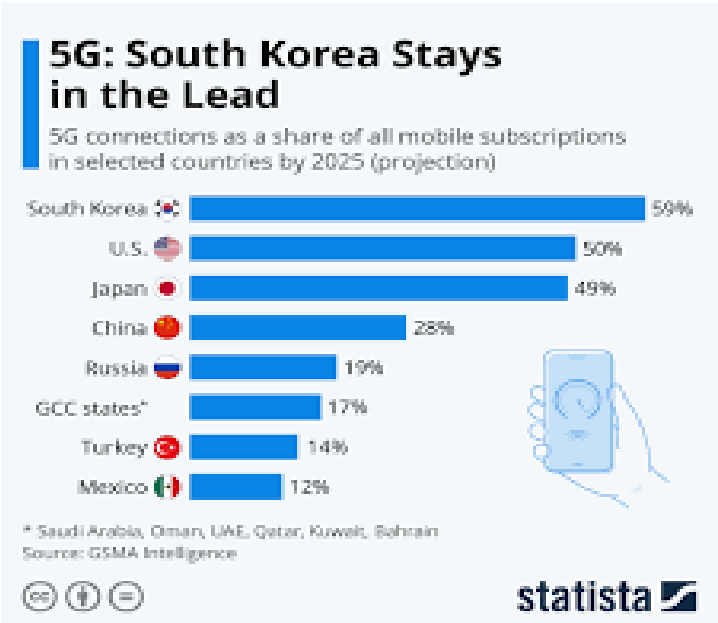


Figure 16 - 5G: South Korea Stays in the Lead

Apple Inc. acquired NextVR, a startup that provides sports and other content for virtual-reality headsets. The acquisition will help Apple's development of VR and AR headsets with accompanying software and content.

The emergence of cloud gaming is driving the market. Recent advances in advanced cloud technology have turned the idea of cloud gaming into reality. In cloud gaming, the server, where all the games are stored, does all the computation work, which includes game scene rendering, game logic processing video encoding, and video streaming. Several companies such as Onlive, G-Cluster, StreamMyGame, Gaikai, and T5-Labs are already offering commercial cloud gaming services. This new sector is also seen as a serious competitor for the traditional game market. Smartphones are the future for mobile gaming and with their growing adoption globally, cloud gaming through 5G may expand (Mordor Intelligence)

As these technologies develop, they alter the way users experience games - providing new opportunities for brands and advertisers to tap into enhanced viewer engagement.

The development of the value chain and the emergence of new opportunities for developers to create their games will stimulate the growth of the industry and the disappearance and appearance of new players.

Use technology to enrich the online gaming experience

Artificial Intelligence and Deep Learning for a better gaming environment

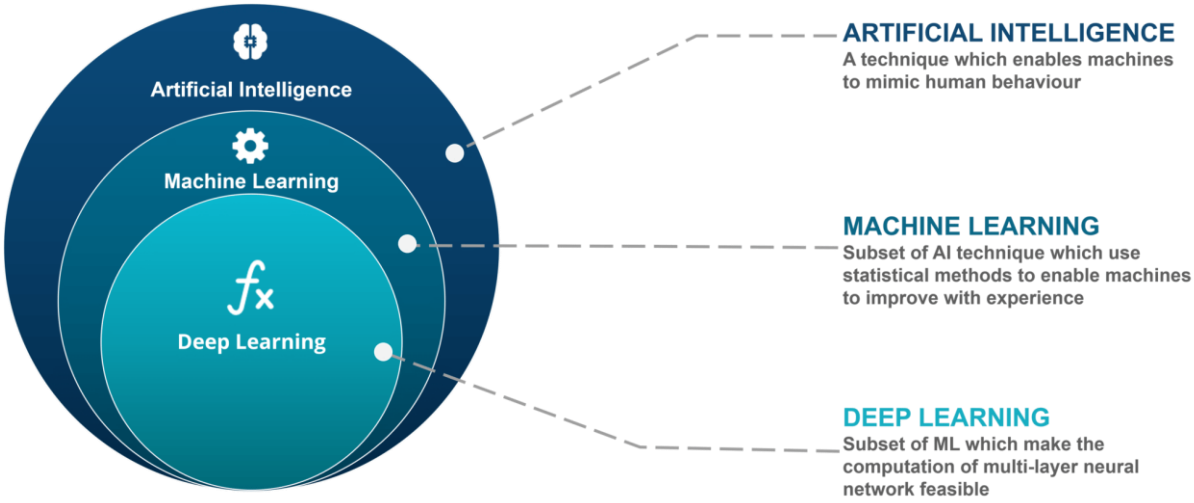
Staying in the same markets in the online gaming industry will force game developers and creators to bet on the player's experience and on personalizing the content presented to them in order to differentiate themselves from other games. Games could automatically generate game content that is customized to fit each player's personality and playstyle, based on their player data by using Artificial Intelligence and Deep Learning.

Video games occupy one of the broadest niches on the market, so hundreds of companies struggle and compete to bring something new to the industry. With the help of Artificial Intelligence, the process is much faster: this technology can educate itself, adapt to various conditions, and develop the plot without anyone's interference. AI will greatly

influence the way video games to look like and the latest software will make them blend with reality, creating new worlds and environments (Sony T).

The content of these games will be automatically generated and customized to fit each player's personality and individual playstyle. Highly sophisticated games—such as role-playing games—will allow players to express nuanced emotions through their in-game actions.

Figure 17 - Deep Learning vs. Machine Learning vs. Artificial Intelligence (noeliagorod.com, 2019)



This hyper-personalization may also have its downsides. On the one hand, it will make games more fun by adjusting them to the taste of each player. But this also means that users will likely play more and more and spend more and more money. While this is desirable for the gaming companies, it could lead some players developing addictive behaviors. (Tennet).

Need for diversification and to invest in markets in the value chain

Investing in esports, digital content and diversification to leverage the users base growth

Platforms such as e-sports betting and fantasy sites have attracted more investments, which is driving the market. Approximately one-third of the e-sports fans in the United States (SPY) participate in online amateur tournaments. However, the issues such as piracy, laws and regulations, and concerns relating to fraud during gaming transactions are expected to hamper market growth, which is a key restraint for the market (Cision).

Gaming zones developed across malls and shopping arenas have attracted large chunks

of people. Gaming video content is a digital content having the access and information of game news instructional videos, game reviews, people goofing chat while playing games, as well as various competitive gaming championships on mobile, PC, and other devices. Gaming video contents is growing at a faster pace as the number of video channels like YouTube, major league gaming, azubu, twitch and many other platforms are growing with the surge in the game playing communities.

Figure 18 - Youtube and Twitch (pngegg.com)

In the digital technology world millions of people play the game which generates huge gaming video content on the social media platforms and other online streaming channels.

Becoming a top esports player is no simple achievement. To rise through the ranks, players specialize in a specific game, developing their skills through extensive, competitive play. Some even train up to 14 hours a day to hone quick reflexes and multi-tasking abilities. Thus, there will be a need to develop parallel markets such as: training through schools and products specialized in improving skills, monitoring of players, agency of players, among others.

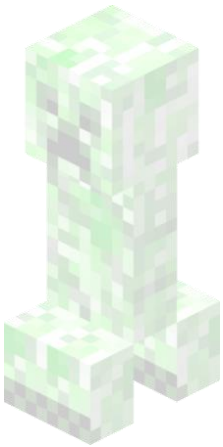
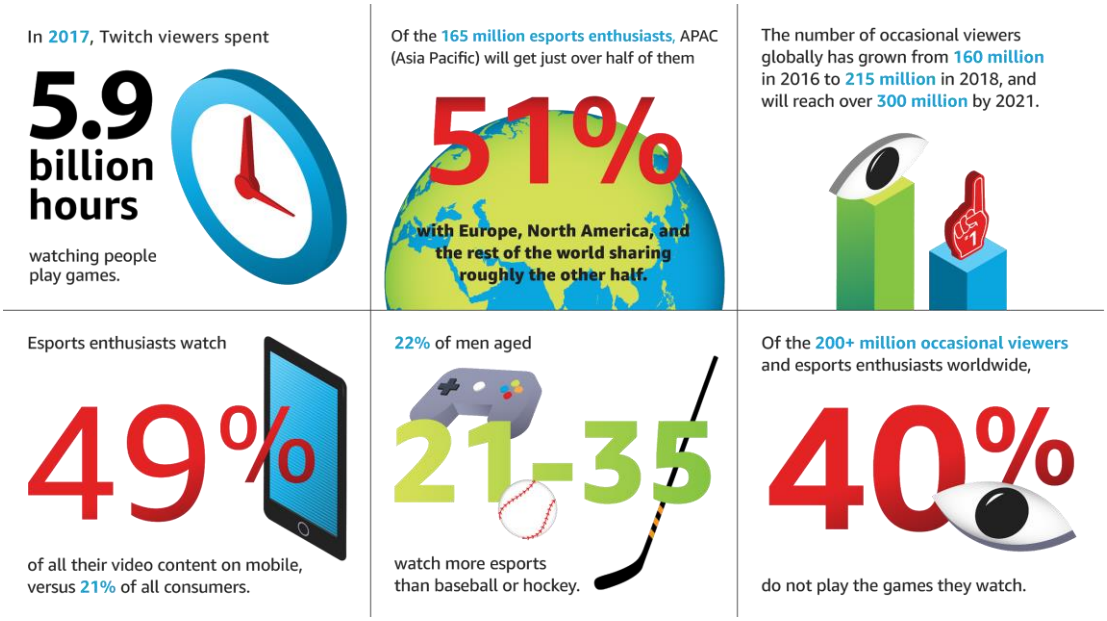


Figure 19 - Insights on eSports players and fans (Emily E. Fulkerson, developers.amazon.com, 2018)



The best esports teams are recruited to be a part of organizations, have several teams that specialize in their respective video games but operate under the same name (e.g., Cloud9, NRG, TSM, Optic Gaming, or Fnatic).

Unlike traditional sports, which can be played by whomever and wherever, publishers build and develop their games and subsequently own all rights surrounding them. This means that they have rights around where the game is played, who can host video game tournaments, and more (Chapman, Josh. 2017). Other marketplaces, resources and platforms:

- Aspiring pro gamer and fan resources: includes everything from news sources, industry statistics tracking, coaching, and skill improvement tools;
- Professional gaming - platforms and infrastructure: tournament platforms (e.g., Battlefy) and communication tools (e.g., Discord);
- Live streaming resources: streaming platforms, streaming services, game highlights, and esports analytics;
- Betting and item Marketplaces: esports gambling, fantasy (with pro-esports athletes), and item marketplaces for in-game customization.

Further investments into existing tech and business models

Freemium business model opportunities, mobile gaming versions of popular games, cross-platform gaming

Failure to explore new opportunities and technologies will force game developers and creators to bet on their games' business model, as well as on platforms with the highest growth of users, for example, mobile. The most recent trend is the growing availability and popularity of multi-functional gaming consoles, which is emerging in the market and helping in growing the market of video games globally. Many governments around the globe are also establishing funds to support the local gaming industry, which is also expected to develop space for mobile games. For instance, in 2019, the German government allocated EUR 50 million for the creation of a games fund.

Free-to-play is the pricing model that is preferred by most of the mobile game developers because of its unlimited potential and can be downloaded without any charge. This allows players to sample a game before deciding whether they want to commit time or money, and tend to accrue higher revenues. In this way, game creators will bet on a freemium model allowing each user to decide how much to invest in their game, increasing their engagement with the brand. In parallel, the games will be increasingly detailed and with constant updates, developing high in-game asset transfers with the current resources of game economies associated with blockchain.

Part of mobile's growth can be attributed to an innovative and seamless user experience which relies on engaging features such as in-app purchases and loyalty rewards. In-game purchase is one of the significant revenue generating channels for the mobile gaming industry. The flexibility for in-game payment methods is also facilitating the growth of the mobile gaming revenues worldwide (Jones, Katie. 2020).

Adoption of Gaming Platforms, such as Esports, drives the market. Esports are witnessing substantial market demand in the current market scenario, and are thus driving the overall gaming industry across the globe. Riot Games with League of Legends and DotA 2 are two of the notable examples of influential actors in the esports business.

Figure 20 - eSports Revenue (visualcapitalist.com, 2019)

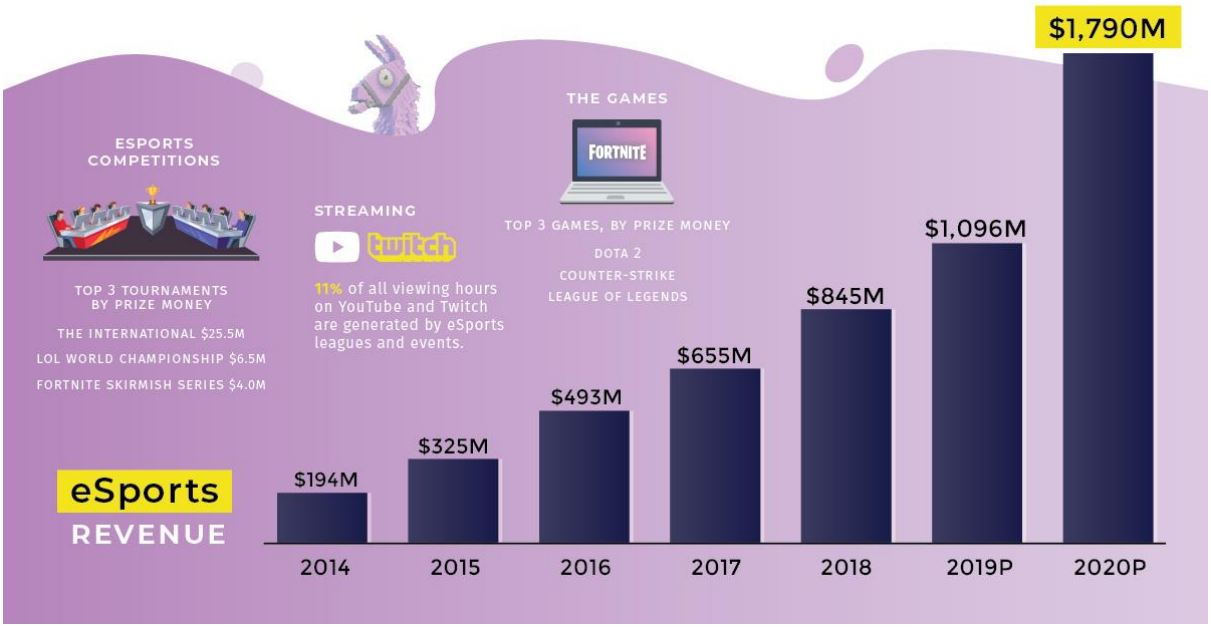


Figure 21 - Netflix vs. Fornite (medianova.com, 2019)

Although online gaming is currently one of the largest entertainment industries, staying in the same markets and the inability to explore new technologies may mean that other substitute goods will continue to grow and provide a more tailored experience for its consumers. Thus, a decrease in the creation of new innovations will mean less investment in the industry and will lead to a not so fast and innovative growth environment, in contrast to what will happen in other industries, for example, cinema and series with the sharp growth of companies such as Netflix and HBO.

In parallel, developers will be able to turn to the player's single player experience in order to allow them to be associated with a more storytelling aspect, reducing the focus of online gaming and the player's network experience.

#6 - OUTLOOK FOR PORTUGAL

6. Outlook for Portugal

Portugal, despite being a country that is considerably small in terms of geographic size and number of people, manages to be an extraordinary hub in terms of entrepreneurship and innovation, being in recent years considered by several authors and business enthusiasts as a gateway to the market European and to attract talent - with initiatives like the Web Summit to publicize the quality made in Portugal.

Since 2014 Lisbon based startups have raised more than €200 million. As of 2018, 7264 companies have been created in Lisbon, 743 of them in the high-tech sector, one of the most popular in the capital. (Font, 2020).

The growth of the creative industry and the world of startups is supported by hubs and communities such as:

1. Startup Portugal: is a public-private think tank that operates as a link between the government, entrepreneurs, incubators and accelerators. It helps to design and implement public policies and private initiatives to serve the ecosystem and attract new investors. It has different initiatives and programs for early stage ideas and projects as well as events to help entrepreneurs;
2. Made of Lisboa is the entrepreneurial community of Lisbon-based innovators that makes startup business ideas and ambitions feel at home. Those who are part of the community get the chance to use collaborative workspaces, get in contact with other innovative entrepreneurs and startup companies;
3. Startup Lisboa was born in 2012 as a private non-profit association that supports the creation of companies and their first years of activity. It provides entrepreneurs with office space as well as a support structure – mentoring, strategic partnerships, access to investment, networking activities and a community based on knowledge and sharing. Aside from the business help, they also have accommodation options of the newbies in the city.

In terms of investment opportunities, some organizations that support several initiatives are:

1. Invest Lisboa;
2. Indico;
3. Portugal Ventures.

Due to the continuous efforts and achievements of experienced professionals, many universities and media schools have been made aware of the opportunities that lie on offering solid and market-ready videogames courses, thus becoming also catalysts for the (re)emerging Portuguese video games industry. This new wave of Portuguese studios is managed by young entrepreneurs that work side by side with more experienced game development professionals, some with more than 10 years of experience in the industry. (PC Games Insider, 2018).

However, the online gaming industry in Portugal faces several challenges associated with size, government tax impositions, investment, size and relevance in the European market.

This industry is constituted mainly by micro enterprises that produce games for the international market. It is a fragile sector, much dependent on own equity for investment funds, and almost totally ignored by the Portuguese state. If Portugal is to take advantage of the moment to create a sustainable industry, several action should be taken. Those have to do with a better knowledge of the Portuguese video game industry, state industry incentives, namely in what regards funding, and the reinforcement of the connections with the academy. (Santos, Pedro, et al., 2017).

Nevertheless, some companies that have been creating interesting content are listed below.

Figure 22 - Fun Punch

Fun Punch is an independent game development studio from sunny Lisbon, Portugal. The company is young but the talent is experienced and with diverse backgrounds: arquitecture, design, advertisement and telecomunications. “Mobile, PC or consoles - we've experienced all of these platforms. We make games from idea, to prototype, to fully fledged game, work for hire and gamification”.

Figure 23 - ZPX

ZPX is a full-range development studio offering design, art, coding, and other services to game developers across the world. The team consists of software engineers and multimedia artists that strive to deliver the very best in games, edutainment, augmented and virtual reality, mobile games, apps, and other interactive solutions. “Funcom owns a controlling interest in ZPX and the two companies continue to collaborate closely on the development of new and exciting games”.

Figure 24 - Ground Control

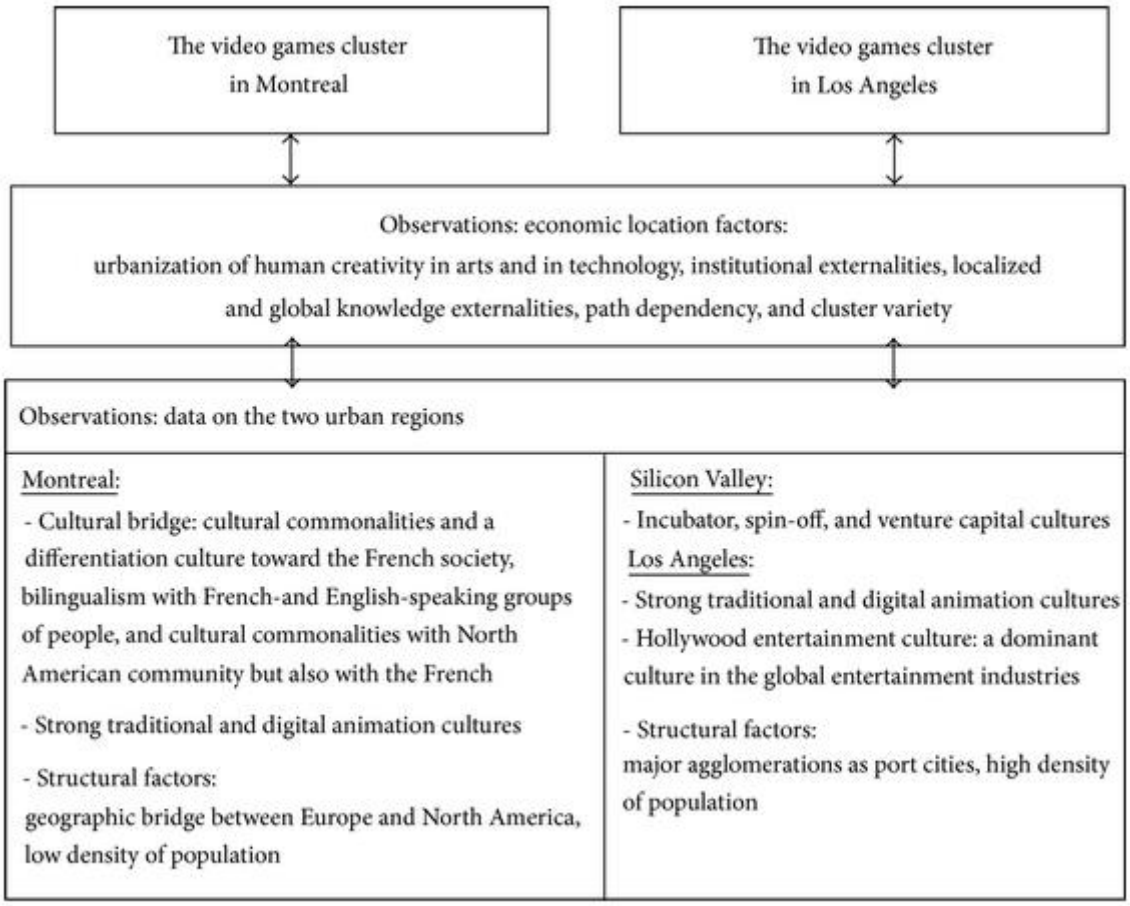
Ground Control is a tiny indie games/VR studio from Porto, Portugal. Founded in 2014, it has been around with different brands since the "mobile era". “Working with VR since 2013, we are having the time of our lives designing, imagining and exploring our creations for this new frontier. Unlike anything we have ever seen, for us VR and Holograms are the technology of a life-time and the gateway to the future of entertainment”.

The video games development in Portugal is an economic activity that quite clearly seems to benefit from the innovative and creative dynamism that tends to characterize the main urban-metropolitan agglomerations. Those urban spaces are the ones where are located the most qualified human resources on which these businesses depend, as well as where it is possible to find the most creative activities, with higher specialization and technological intensity, with whom collaborate the businesses and creators of the video game sector. This location pattern seems to suggest advantages derived from economies of agglomeration, even in the digital era where interactions are facilitated by telematic networks. These businesses and creators value the geographical proximity between them, as it facilitates the learning process that comes from exchange of experiences, or the establishment of partnerships and outsourcing networks. (Santos, Pedro, et al., 2017).

Thus, it is extremely important for the industry to create partnerships and incentives for the training of young people in the areas of video games. It is also important to understand the formation of clusters in certain regions and how they could be replicated in Lisbon.

In the case of LA, the presence of Hollywood appears to be the major factor, with important cross-fertilization between film and gaming. In Montreal, beyond the cross-fertilization with film and animation, which is also present, it is interesting economic advantages (low rent, relatively low wages) contributing to the interest for this city but also a very important public policy which served to attract firms to Montreal and give it a place in the multimedia and gaming industry through a branding effect created by the City of Multimedia policy. (Pilon and Treamblay, 2013).

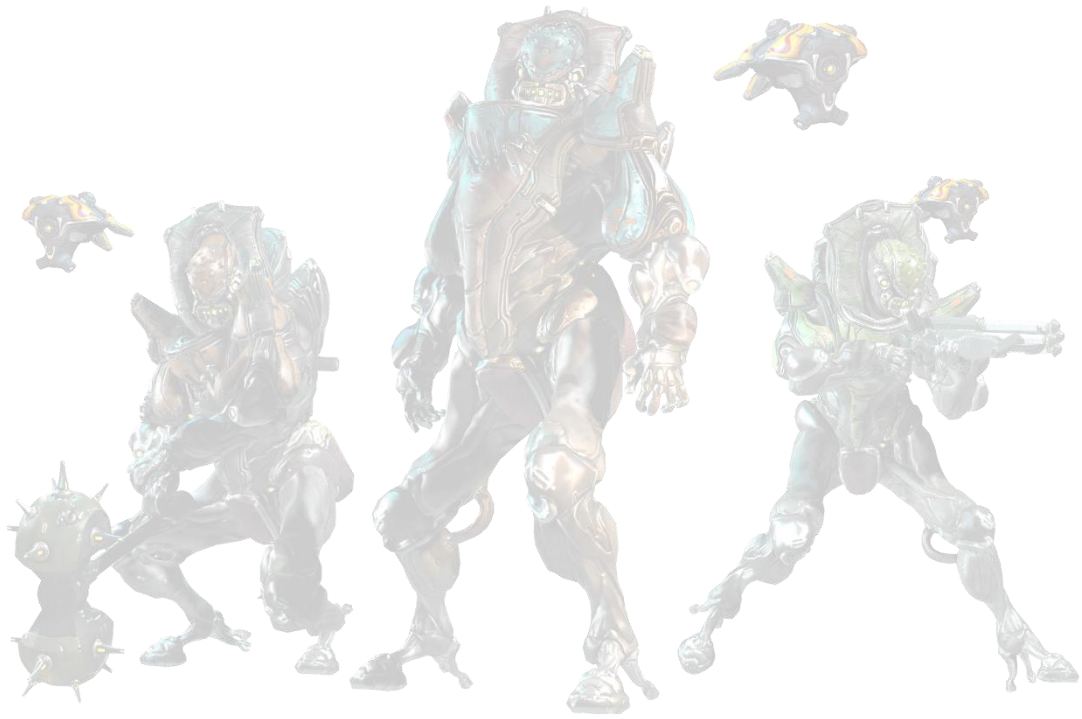
Figure 25 - Synthesis of the Geography of the Video Games Clusters.



With the appearance of new games, new players, new technologies and growing globalization, the consolidation of a global position and the creation of potential to grow in the industry, will depend on the incentives to the sector and the capacity to generate investment.

The investment in innovation and the offer of benefits to companies in these industries - such as tax exemption until the product / game is ready to go to the market - may allow the appearance of more and more companies. And, as a basic principle of competitiveness, the more players and demand in a market, the greater the need to innovate and create something that is in the "fashion" of trends.

Universities and media schools programs revolving around videogames development have also matured, with joint-efforts between them to and create better game prototypes. Projects like GameNest, a kind of games incubator that joins IPLeiria Videogames, Lusófona Videogames BA degree and ETIC, an art and technical school are great examples of the quality of work from students that will soon join the industry as a valid workforce. GameNest projects include last year winner of the PlayStation Talents awards “Out of Line”, but also another finalist of the PSTalents and other competitions like the Nordic Game Discovery Contest. (PC Games Insider, 2018).



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