

# Video Game Industry Analysis

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## ABSTRACT

The video game industry continues to grow year after year as video games become more popular among all age groups. However, the industry has seen significant changes in many areas over the past decade. Mobile gaming has seen an increase in popularity while other platforms have gone through changes of their own. This study will outline some of the statistics related to the gaming industry specifically in console and mobile gaming and then attempt to explain the findings as well as introduce my implementation project that is on a related topic.

## KEYWORDS

PC, Console, Mobile, Game

## 1 Introduction

Video games have been a pastime of many for decades and more people are playing them every year. In the past, video games were seen as a somewhat nerdy hobby, but I believe that time has passed. Video games are so accessible now, that anyone can play if they have the desire. Video games have also gained popularity in the media due to the rise of video game streaming as well as esports. Video games might never be as mainstream as other hobbies but since the industry continues to grow, it shows there is a demand for them.

Currently, the video game industry is broken down into three main markets, the PC market, the console market, and the mobile market. The PC and console markets were the first to take hold of the industry and have been around since the 1970s. The mobile market is much newer, only getting popular in the last ten or so years. Mobile gaming is an easy way for a lot more people to get into gaming due to the low barrier of entry, unlike in the past where you had to buy a PC or console to play games.

## 2 The Growth of the Industry as a Whole

This section will highlight some of the important details regarding the growth of the industry as a whole without focusing too closely on the details of any of the three main markets. The growth of the industry is quite complicated with a lot of factors that play into it so I will only be giving an introductory analysis using the information in the industry report from IBISWorld.

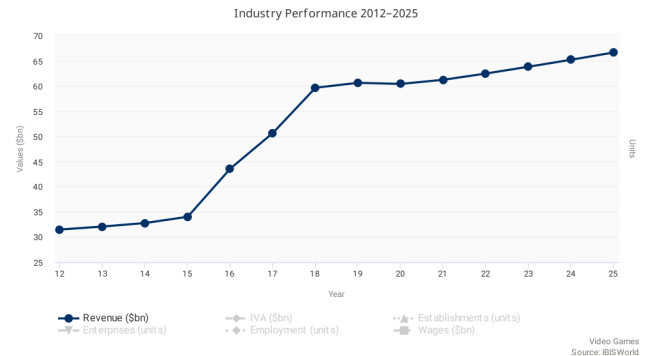


Figure 1: Industry performance measured in billions[1]

Figure 1 above shows the overall trend of revenue generated from the video game industry. The industry is expected to decline slightly in 2020 due to the effects of COVID-19 but is then expected to continue to grow in the next five years.

### 2.1 Reasons for the Growth

There are many causes for growth in the industry, increased per capita disposable income, increased consumer confidence index, and the rise of online services as well as mobile gaming[1]. Per capita disposable income is the amount of disposable income each person in the U.S. has and the consumer confidence index is a measure of how confident consumers are in the U.S. economy. While these are more closely related to economic health they can also relate to video game sales since the more disposable income people have the more likely they will be to spend money on video games. Other reasons for the growth include the increase of paid services within games such as microtransactions and downloadable content (DLC). These paid services are often added to multiplayer games to give players incentives to keep playing.

### 2.2 Effects of COVID-19

COVID-19 has had a large impact on the gaming industry in both positive and negative ways. On the positive side due to social distancing people are spending more time indoors and more time playing video games so spending on online services has increased. However, hardware sales and retail sales, in general, have fallen[1]. Even after the COVID-19 pandemic is over this trend will probably continue as most of the big companies are trying to move in the direction of all digital sales.

### 2.3 Looking to the Future

The industry is expected to continue to grow over the next few years as shown in Figure 1. The reasons for the continued growth are mostly the same as I mentioned previously but I would like to highlight one more reason that keeps the future of the video game industry looking bright; that is its user base. A lot of the people who started playing video games several years ago will continue to play as long as they can, while more new gamers start playing every year.[1] Effectively more people start playing every year, than stop playing so the industry will continue to grow.

## 3 The Changes of Console Gaming

Video game consoles are one of the oldest forms of home gaming dating back to the 1970s. Video game consoles are essentially hardware designed specifically to play video games, at least that's what they were in the past. Nowadays, consoles are getting pretty close to full-fledged computers that can browse the internet, playback video, and store data on their hard drives. The video game console industry has seen massive changes over the last decade, so I'll be going through a couple of the most important ones, in my opinion.

### 3.1 A Move from Physical to Digital

Like many things in recent years, video game consoles are following a trend of reduced physical media sales and greatly increased digital sales. Figure 2 shows that in 2009 80% of game sales were physical, which is now down to 17% in 2018[2]. Causes for this massive shift are likely attributed to more households having a fast internet connection required to download or stream games and the video game consoles themselves having better support for downloading and storing games on increasingly larger hard drives. In addition, Microsoft, creator of the Xbox console, released a version of their Xbox One without an optical drive in May 2019 further indicating their support for an all digital future. They even named it "Xbox One S All-Digital Edition".

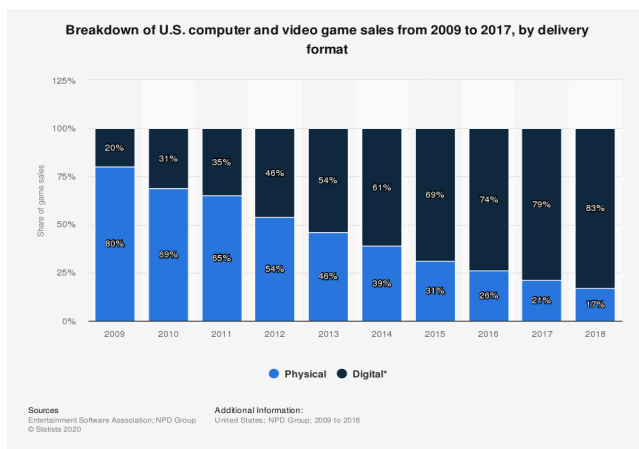


Figure 2: Trend of Video Game Sales by Delivery Format[2]

### 3.2 The Age of the "Mid-Cycle Refresh"

For the past 20 years, video game consoles followed a release cycle where each major company would release a new console roughly every seven years. However, with the most recent generation of consoles which began in 2013 and includes the PlayStation 4 and Xbox One, Sony and Microsoft each released a second console which is meant to be a step up from their original console but not so much so that it warrants a new generation. These consoles are called the PlayStation 4 Pro and Xbox One X from Sony and Microsoft respectively. These consoles have also been referred to as the "mid-cycle refresh" as they are meant to refresh interest in the companies' consoles by providing a modest performance increase.

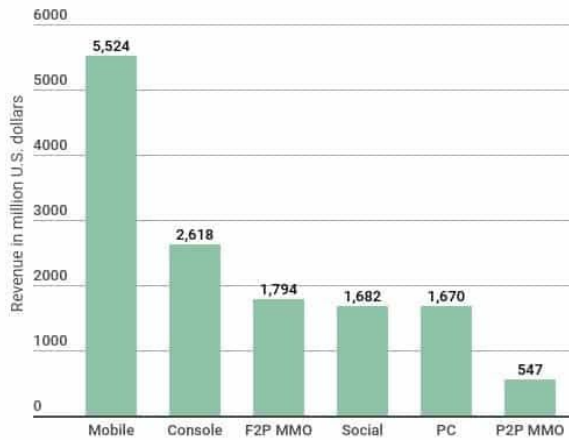
#### 3.2.1 The Reasons for the Refresh

This generation of consoles is the first time we've seen these companies do this. There are a few possible explanations that I think are the most likely for this new approach. First and most obviously, as I mentioned before the release of these slightly more powerful consoles renews interest in the brand of the companies and allows for more hardware sales after the initial interest has died down. Second, it gives the possibility to increase revenue on software sales as well since the mid-cycle refresh consoles still play the same games as before[1]. Finally, sort of related to my first point, these consoles allow Sony and Microsoft to be able to compete in a very quickly changing world[3]. Seven years is a long time to try and market the same hardware, especially with new PC components and smartphones coming out every year.

## 4 A Closer Look at Mobile Gaming

While PC and console gaming has been around for decades, mobile gaming became popular only a few years ago when smartphones became commonplace. Mobile gaming has become an important part of the gaming industry since it has a low or non-existent entry cost, assuming you already have a smartphone. The games with no entry cost usually follow the freemium model which allows you to download the game for free but then it contains in-game purchases. These purchases usually consist of buying an in-game currency which is then used to purchase special in-game benefits, some of which are directly related to gameplay while others are purely cosmetic. This model is highly effective at getting new users to download and try out a game and then encouraging them to make in-game purchases to improve their play experience.

**The Revenue of Digital Games Industry in the U.S.  
in Million U.S. Dollars by Game Category (2016)**



Source: SuperData Research

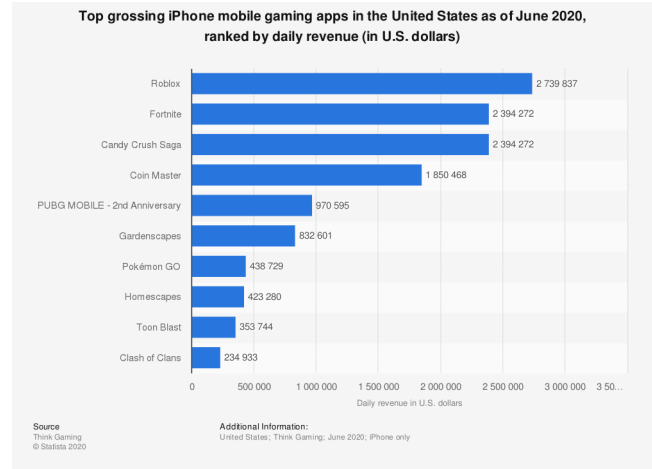
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**Figure 3: Revenue of Digital Games in the U.S. in 2016[4]**

Figure 3 shows that even back in 2016, revenue from digital sales mobile games was over twice that of consoles or PC. However, it's important to keep in mind that this is only digital sales and that consoles and PC have hardware and retail components as well, so this graph doesn't tell the full picture. It's just meant to show that mobile gaming isn't a small part of the industry.

#### 4.1 How Mobile Games Make Money

There are several ways mobile games can be monetized, including in-app purchases, ads, pay to download, or a combination of these. All of the top games use in-app purchases as part of the freemium model I mentioned earlier. However, since the in-app purchases are optional only a certain percentage of the users purchase them. According to some analysis by Rakuten Intelligence, 10% of mobile gamers account for 90% of revenue, with some gamers spending hundreds of dollars on certain games[5]. Statistically speaking the more total users a game has the more users will pay for in-app purchases as well as the more ad revenue can be made. This is how the top games make millions per day; they market extensively, gain a large player base, and then rely on in-app purchases and ads to recoup marketing costs and make a profit.



**Figure 4: Top Grossing Mobile Games in the U.S. in 2020[6]**

Figure 4 shows the top mobile games on the iPhone by daily revenue. Among the top include, Roblox, Fortnite, Candy Crush Saga, Coin Master, and PUBG Mobile.

#### 4.2 Demographics in Mobile Gaming

Traditionally gamers have been predominantly male and relatively young, however when it comes to mobile games the demographic is much broader. In fact, according to Betting on Billions, a report by Newzoo, in December 2018 the gender split for mobile games was almost exactly equal with 51% of females playing them and 49% of males playing them[7]. The age range is still relatively consistent with other forms of gaming as the most common age is between 21-35. These demographics aren't too surprising since the only thing you need to play mobile games is a smartphone and that's something most people have regardless of age or gender.

### 5 Project

Now that we have a bit of background about the gaming industry I'll be discussing my implementation project and what I hope to learn from it. For my project, I'll be looking at how total game sales relate to other attributes of a game such as genre or review scores.

#### 5.1 The Dataset

My initial dataset will come from a video game database website called vgchartz.com. This website contains data for tens of thousands of video games over the last 40 years. To get at this data I will be using a scraping tool created by GregorUT[8]. There are datasets already available online but they are from 2019 so I wanted to create my own dataset to get the most up to date information possible.

## 5.2 Data Cleaning

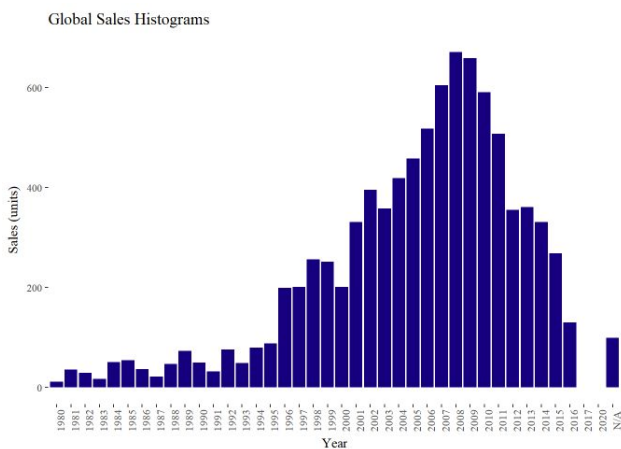
Even though the scraping tool makes it easy to get the data from the database, a lot of the games that are in there have missing columns or inaccurate information. Another problem is illustrated in Figure 5, which shows how many games sold how many units, from a dataset from 2019. The database contains around 55,000 games, most of which aren't very popular or are completely unknown and so the vast majority of games end up with low sales or no sales, skewing the distribution heavily as shown in Figure 5. Since my analysis cares about game sales compared to other attributes of the game I will need to omit any games that don't have sales data. Additionally, I will need to supplement the review score data for some games since that is also sometimes missing.



**Figure 5: Number of games vs how many units were shipped[9]**

## 5.2 Data Visualization

After the data is cleaned, I will be creating the visualizations. I plan to use Python to create different types of graphs and charts to try and gain some insight into the dataset that I have created and more generally the gaming industry as a whole. Figure 6 comes from a different study on video game sales and just using it as an example of something similar to what I want to make. Although simple, I think graphs like Figure 6 are very helpful in quickly finding trends without having to look through an entire dataset.



**Figure 6: Global Video Game Sales since 1980[10]**

## 6 Conclusion

In this study, we took a look at the video game industry as a whole, figured out why the industry is growing, and learned about the effects of COVID-19. Then we took a closer look at two specific parts of the video game industry, console and mobile gaming. We examined more closely why console gaming is changing and then looked at why mobile games are so popular today and how they make so much money. Finally, we took a brief look at what I will be doing for my implementation project.

## ACKNOWLEDGMENTS

We would like to thank Professor Kristin Tufte, the instructor for this course, for providing advice, ideas, and resources for this project.

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