

Data and AI – Project

Understanding the video games' industry

1. Introduction

1.1 Why video games ?

The video game industry is a subject we're keen on because we spent part of our childhoods playing different games, on multiple devices. Having grown up, we'd now like to discover what variables made the success of the games we loved to play as kids.

The economy of the video game industry is now more important than ever. What if we could figure out how to take the most of it, learning about its levers of success.

1.2 What are we asking ourselves ?

To guide our research, it was important for us to list all we were asking ourselves regarding the subject we're working on. These questions included:

Is the company responsible for a game's success or the game itself?

Do successful games set trends or do trends make games successful?

Is the success of a game only decided by its genre and platform? What other features of a game can make it successful?

Is there still space for little developers on the market or is it already overcrowded?

Was it easier to make a successful game back in the days or nowadays?

Does making a successful game imply a huge investment?

Did these "turning point" games impact in any kind of way the means necessary to make a successful game afterwards?

Is the gaming industry driven more by innovation or by meeting consumer expectations?

Are indie games more likely to push boundaries and introduce innovative concepts compared to big-budget AAA titles?

Are sequels more likely to succeed than original IPs in the gaming industry? What factors contribute to their success or failure?

How much does timing (release date) impact a game's success in the market? Is there an ideal time to release a game?

Do game reviews and critic scores significantly influence a game's commercial success?

In a highly competitive market, is there a particular niche or underserved gaming demographic that presents an opportunity for success?

1.3 What next ?

By answering these questions, our goal is to determine the major factors that predict the popularity, and therefore the success (or otherwise), of a video game.

Indeed, we know that game trends evolve over time and are subject to fads. We want to study whether these waves of enthusiasm follow well-defined cycles. Obviously, we hope that it could be possible to predict them in advance, to choose the genre and features of our future game.

For example, we know from preliminary studies (shown later in this paper) that in the years 1995-2003 the ‘sports’ game genre experienced a peak in popularity, and then it was the turn of action games from 2003.

We also believe that the popularity of a game varies greatly from one region to another. For example, Grand Theft Auto V sold very well in the USA, but way less in India. Our studies will enable us to determine which strategy would be the most convincing: choosing a game that we are sure will be a success in a specific region, even if it means abandoning certain other regions, or, on the other hand, betting on a game whose success may not be as flamboyant but will affect more people.

1.4 How did we find answers ?

1.4.1 Hypothesis

1. Do successful game set trends or do trends make game successful games?

We think that trends need to begin somewhere, so the trends begin with a game that is so successful that it creates a new wave of games that follow its style or its gameplay, to get a little bit of the success of the first game. So, for us, it is the trend that make the games so successful. For example, the action games like call of duty or battlefield, that generate a lot of action games afterwards, but even one game can create a trend on its own.

2. Is the company responsible for a game’s success or is it about the game itself?

We think that the company name holds a part of the success of a game for most games, because the company can have a lot of experience in a specific kind of genre, for example EA sport with the sport games, or Activision with action games, like Call of Duty. They made great games before so they should know a lot about their fields. But sometimes a less popular publisher who doesn’t have a name, they can create game gems that surpass their publisher’s name and maybe change the face of the video games industry, creating a trend for example, like Five Night at Freddy’s or Undertale, who were made only one person with no background and change the video games industry.

3. Was it easier to make a successful game back in the days or nowadays for a small publisher?

Back in the days, it could be more difficult to publish a game and make it popular, because internet wasn’t existing, so for a small publisher with not a lot of financial assets, to make their game visible could be a real challenge. Also now, we have a lot more players than before

because the game has not anymore, a bad image by the public and is even part of the general culture of people, like we could see with the Mario bros film who did one of the greatest entries for animation movie. So, it should have been much more difficult back in the days to make a successful game for a small publisher compared to nowadays.

4. Is the success of a game only decided by its genre and platform? What other features of a game can make it successful?

As we said before, the name of the publisher can have a part in the success of a game, because of their experience. But indeed, we think that the genre of a game can have an impact on the success of a game, because not everyone can be fan of a puzzle game or a simulation game, and generally it will not interest most of the public. Also, the platform has an impact on the success of a game, because not everyone plays on an Xbox or a PS4 or PS5, so the more platform that can play the game, the more success it will obtain upon its release, because it will touch a larger public. But as we said before, the trends can also influence the success of the game. And maybe the geographical situation of the player because someone from Asia will not have the same desires than someone from the US or from Europe.

1.4.2 Gathering people's past research.

We're conscious that we weren't the first people to lean on the Video Games industry, thus other papers, articles, and essays certainly were available on the internet, so we looked for them and were able to answer more than half of our questions this way.

But it wasn't enough, we didn't have all the answers we were looking for.

1.4.3 Digging deeper.

To find more answers, we had to do our own studies. To make this study we needed data, thankfully, some of the similar projects we found shared the databases they used. We downloaded them and merged them in one big database for us to study.

Merging databases of other research gave us the possibility to dig deeper into the relations between the characteristics of every single game and its success on the market. For instance, merging databases let us look for correlations between a "Global Sales" column and a "Game Average Length" column, as both were filed in different databases.

2. Results

2.1 Answers from papers and articles

2.1.1 Are indie games more likely to push boundaries and introduce innovative concepts compared to big budget AAA titles?

Indie game, as their name tell it, are games made by small studio who haven't a huge budget, but they don't do it specifically to make money, but much more for passion, they take time to make their game to obtain a well-developed game, some indie developer delay their release date so they can

upgrade their game even more, on the graphics or on the gameplay for example. They are much closer to the fan, they don't appeal to a mass market audience, but more to fan of a specific genre, so it will be much more experimental and original compared to big AAA games, to please the players even more than what they usually play.

Also, they have more creative freedom and flexibility, allowing developers to experiment with unique ideas and take creative risks because there isn't any time limit, that's why they can delay their release date.

2.1.2 Are sequels more likely to succeed than OG IPs in the gaming industry? What factors contribute to their success or failure?

The success of sequels versus original games in the gaming industry is influenced by various factors, and it's not universally true that sequels are more likely to succeed. Success depends on the specific circumstances of each game, the quality of its development, marketing efforts, and audience reception.

Some franchises thrive with each successive game, while others may see diminishing returns. As factors, we could say the brand recognition, if it comes from a big publisher or not, the innovation compared to the first opus, if they have listened to the critics of the first game and improved the game with it, or for example, if the hype that the first game generated is massive compared to the marketing of the first game.

2.1.3 In a highly competitive market, is there a particular niche or underserved gaming demographic presenting an opportunity for success ?

To think about this question, we need to think about all the progress and innovation in the gaming market that happened in the past few years, and one innovation outshines the others, it is the VR, or the virtual reality. Indeed, according to a report by Statista, the global virtual reality gaming market was valued at \$7.7 billion in 2020.

Also, according to a report by Statista, the global virtual reality gaming market is projected to reach a value of \$45.09 billion by 2027. From action-packed shooters to immersive role-playing games, there's something for everyone in the VR gaming world. But it is also a risky bet because it is only at the beginning of this innovation and a lot of companies failed in this kind of project like Google with the Google Glasses or Meta with the Metaverse, was it too soon and the public wasn't ready for that, was it just bad and just stay in preparation to perfect the system, we don't know.

So, for now it still stays as a niche because not everyone can afford the material, but soon, it could become the future of the gaming.

2.1.4 Does making a successful game imply a huge investment ?

Today, the average budget required to produce a blockbuster is estimated at around \$140 million. In the mid-2010s, it was closer to 60 million.

Nevertheless, a few games have stood out from the crowd and are now enshrined in the video game pantheon, even though they were made with very low budgets and extremely small teams, or even just one person.

The most striking example is Minecraft, released in 2011, developed by a single person and sold to Microsoft for over \$2.5 billion in 2014.

Another case is Rocket League, released in 2015 with 2 million to reach a budget of almost 980 million and very present on the competitive scene, or Five Nights at Freddy's in 2014 with an initial budget of just \$15,000 for a profit 13,000 times higher, more than 9 games released and a film adaptation, and several other games including: Undertale, Outlast, Hollow Knight...

Clearly, a substantial budget is preferable for the development of a game with such ambitions, especially nowadays, but there are enough examples to prove that this is not compulsory, and that even "small" games can end up making an indisputable name for themselves in this field.

2.2 Answers from our own research

As stated in the introduction, we had to dig deeper than these papers and articles, so we analyzed our merged database. The pure analysis is available on our GitHub ([GitHub repo link](#)) under a jupyter notebook format.

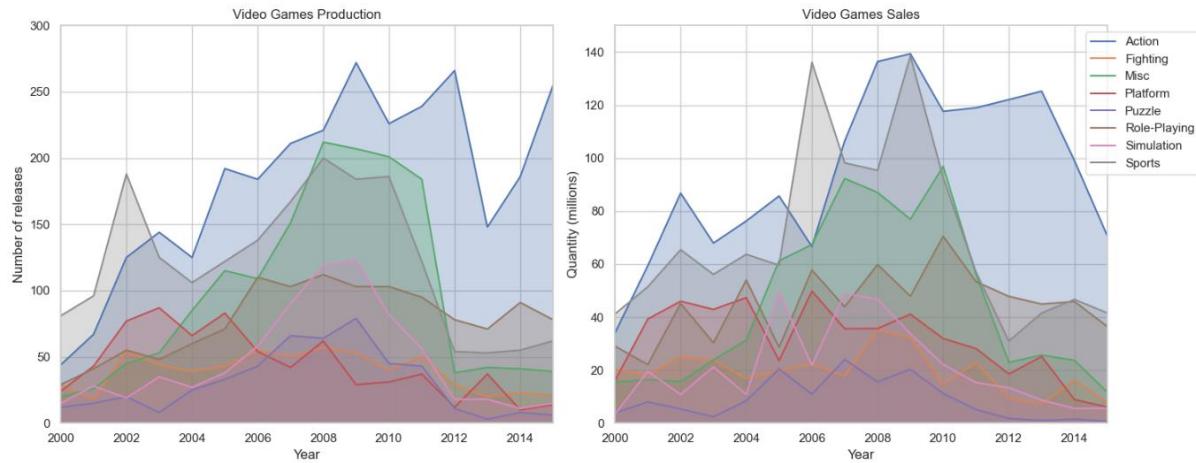
Here are the questions we answered :

2.2.1 Do successful game set trends or do trends make game successful ?

We first plotted the game sales per year and the amount of game of a certain genre released, per year. As we can see on the graphs, it's the amount of sale that sets the trend of production.

For instance, focusing on sports games: There have been a big rise in sales in 2006 for sport games, resulting in a rising number of games of this genre created between 2006 and 2008. The big downfall of the interest people had in sports game in 2010 was followed by a reduction in the new sports games on the market between 2010 and 2012. This reduction can also be attributed to the "big" sports games' licenses starting to settle their grip on the market, leaving fewer space for entrants.

Exploring and comparing other curves the same way shows us that the market's production reaction time is about 2 years, more or less the time needed to make a game. Thus, if a game genre becomes popular in 2010, the peak of new releases for this genre will be 2 years later.

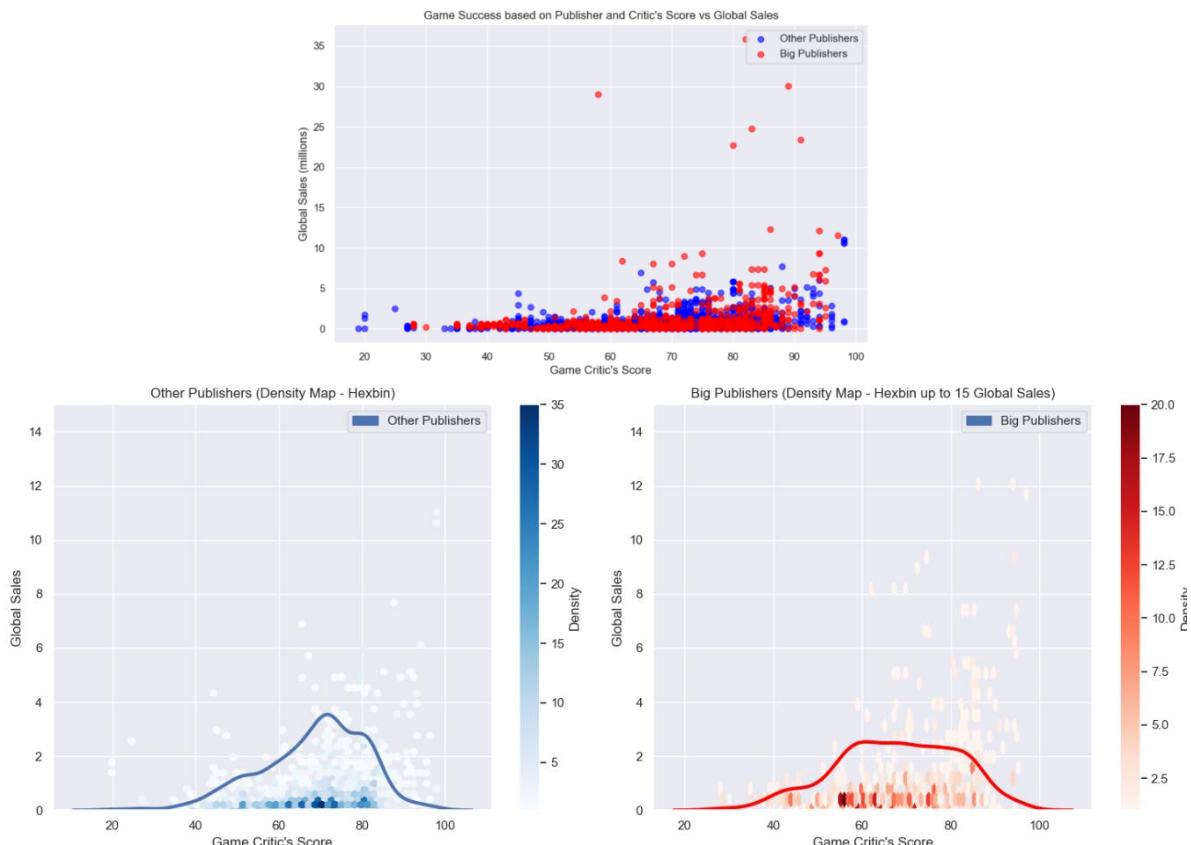


2.2.2 Is the company responsible for a game's success or is it about the game itself ?

Here we'll look for a correlation between successful games and the company that made them. We'll draw a graph plotting the games as dots on a 2D graph, with game critic's score and global sales as X and Y axis, respectfully.

Games made by big publishers between 2000 and 2015 (Nintendo, Ubisoft, Sony Computer Entertainment, Activision, EA, Sega, Microsoft, 2K, Rockstar Games) will be marked in Red, the other games, considered made by smaller publishers, marked in blue.

In order to have a better understanding of this plot, we'll split the blue and red dots and make a density map for each color.



Here we figured that the question is deeper than "is it about the company or the game".

Obviously (or not) the most successful games (by units sold) are published by the main and gigantic publishers. But both big and small publishers can create successful games.

Looking for an answer to this question, we found out another hidden but important information: the game's critic impact on its sale depending on the size of its publisher.

For big publishers, any score over 60 won't affect the capacity of the game to be well sold, whereas for small publishers, the critique has more importance, as games with critics between 70 and 80 sell well better than games with a score of only 60.

I won't bother studying the top scores and its impact as our sample is really small. Only a few games get above 90 or 95 on critic's score, they end up being unique cases every time.

Even though, it's interesting to see that the best rated games aren't made by big publishers! Would the small publishers tend more to try new things, and sometimes being rewarded with a good critique because they found a new innovative way of playing?

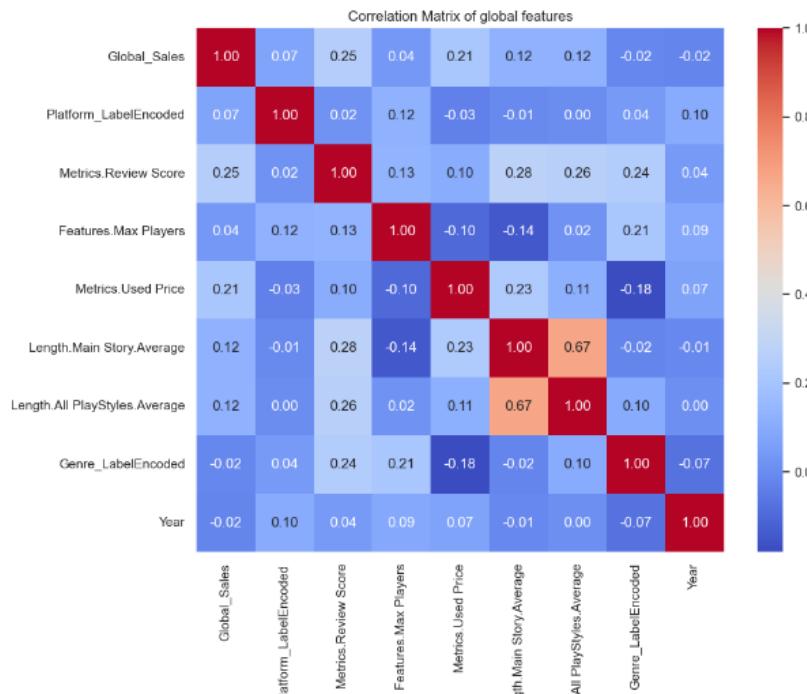
2.2.3 Was it easier to make a successful game back in the days or nowadays for a small publisher?

Looking at the Global Moving Average of the small publisher's sales, we could say that before 2000 and what we called the "Video Games Boom", it was easier for small publishers to stand out as their market share was higher, comparing to 2010-2015 where it nearly reaches 0. Compared to our hypothesis, the graph shows us that back in the days, small publisher's games had more chance to become a success compared to present time even with more players (and thus, buyers), big publishers have more weight in the industry



2.2.4 Is the success of a game only decided by its genre and platform ? What other features of a game can make it successful ?

To answer this question, we can build the correlation matrix of the game's features we suspect to be affecting its commercial success.



We overall get very few correlations. Considering a game is successful when it has good critique and sells, the most correlation we have is between:

The sales and the review score.

The sales and the price.

The game review score is slightly correlated with : the main story's length, the global game length (or playtime), and the game genre.

Surprisingly, the game's genre affects the review score but not the sales !

Year of release doesn't affect either the sales nor the critic score. Let's see if the region where the most sales are done affect the global sales, and by how much. To do so, we'll build the regional sales correlation matrix.



Here we learn that to make a game that sells, we shall focus on doing a game that would please the North American and European regions as they're the ones most correlated with the global sales !

As both are fairly correlated, it might be easier to focus both by focusing one of them.

Conclusion

In conclusion, our study on the video game industry has unveiled valuable insights into the determinants of a game's success. Trends have been identified as influential drivers, with a two-year lag in production responding to the popularity of a genre. Small enterprises can thrive by emphasizing innovation, and critic scores play a crucial role, particularly for them.

The historical trajectory suggests that smaller enterprises had more opportunities before 2000. The success of a game hinges on various factors such as critic scores, pricing, and regional preferences, with a strong emphasis on the North American and European markets.

The budgetary aspect of game development, exemplified by cases like Minecraft, underscores that substantial budgets are preferable but not obligatory for success. The industry accommodates both blockbuster productions and smaller-scale projects that can make a significant impact.

The analysis of virtual reality gaming as an emerging niche, highlights both the potential for innovation to drive success and the associated risks of pioneering technologies, emphasizing the delicate balance between novelty and market readiness.

Sources and links:

Our GitHub repository :

<https://github.com/Hu9o73/Video-Games-Industry-Analysis-and-Forecast>

Dataset about games and the gaming industry :

<https://github.com/leomaurodesenv/game-datasets/blob/master/README.md>

Similar projects, databases :

<https://github.com/dsintheoceanc/game-market-analysis>
https://github.com/chantellechow/online_game_store_marketing/

Research papers and articles :

<https://www.vintageisthenewold.com/game-pedia/why-are-indie-games-better-than-aaa#:~:text=Indie%20games%20are%20known%20for,a%20hallmark%20of%20indie%20gaming>

<https://www.nightquestgames.com/the-charm-of-indie-games-are-they-better-than-aaa-titles/>

https://www.reddit.com/r/truegaming/comments/c00vf1/why_is_it_that_video_game_sequels_seem_to_have_a/?rdt=38572

<https://fastercapital.com/keyword/vr-gaming.html>

<https://www.slashgear.com/1012807/the-biggest-vr-and-ar-flops-of-all-time/>

<https://www.statista.com/statistics/248875/in-game-mobile-gaming-revenue-in-the-united-states/>

<https://gamerant.com/budget-games-best-selling/>

<https://kotaku.com/microsoft-activision-blizzard-call-duty-gta-vi-halo-1850391113>

<https://www.g2a.com/news/features/low-budget-video-games-worth-way-more/>