Relationship between development and quality of video games

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Abstract. The purpose of the paper is to investigate whether the development process of a video game relates to its quality. The worldwide video game industry had its ups and downs from their beginning in the 1950s until the present, with many video games released to success, but there are many which fail. To find the relationship between the development process of a video game and its quality, the author tries to study the development of 20 video games from a multitude of genres by AAA developers and publishers in the last ten years and comparing their respective critical reception and sales. The result of this paper tries to answer the question of whether a video game will be successful or failed in the commercial market based on its development process, marketing and life cycle. From the recent trends, the result is most likely inconclusive or varied depending on the video game in question. The author expects that this paper will give an insight about the development of video games to the readers and act as a basis to decide whether a video game can be considered a success or a failure in the market.

1. Introduction

According to Priyantoro, video games are products of consumerism initially meant for profit, but over time develops further until in the end having branches on various aspects of human life, becoming alternative guidance in one’s life and daily routine, and as a simple form of entertainment in each’s grasp [1]. Hadzinsky concludes that the video game industry is a dynamic and complex one with an unpredictable future due to many decisive factors and the number of people involved in various roles in the video game industry [2]. Alpert also believes that the video game market as an entertainment software is highly diverse, from the gamers’ demographics and the available genres, unlike the common belief that the video game industry is nothing more but a group of gamers playing [3].

Pruett explains that a video game’s production quality does not decide that it will be financially successful on its own, which can be seen on Grand Theft Auto III with about 8 million copies sold worldwide despite its violent and controversial storyline, and Shenmue with only about 500 thousand copies sold despite its praised storyline [4]. The same opinion is also emphasized by Becker who says that despite a video game’s critical and commercial success is the accepted standard to measure their popularity, which is then become the indicator of the video game’s quality on the eyes of the gamers, developers and critics, there are subjective factors involved as well [5]. A research was done by Aleem et al. also shows that business factors such as consumer satisfaction, marketing time, monetization strategy, market orientation and brand name strategy play a major role in a video game company’s performance [6].

Rayna and Struikova believes that two paradigms of video game business models, one which is carried on from video games for PC and consoles, and the other which is promoted by mobile and online...
video games, can co-exist amidst the clear, significant differences, with PC and console video game developers are also actively developing mobile and online video games, while mobile and online video game developers also start to reach out into the PC and console video game market, and the quality and features in a mobile video game starts to compete even with the most advanced console video games, but concludes that the video game industry, despite its long-lasting success and very large revenues, can be compared to a “giant with feet of clay” [7].

Another research done by Aleem et al. concludes that the video game development process is a challenging one due to the applied technologies, starting from the platform and game engine used, which may change rapidly as time process, and a video game’s success also results in a greater pressure for the developers along with challenges during the video game’s development [8].

Meanwhile, Weststar explains that video game developers can be said as interesting as video games stands between an Information and Communications Technology entertainment and a cultural media, has clear social limits which determines their status within it, are highly involved and takes their identities from a video game’s development, internally self-referencing and has both work and rest times that melds their fondness on video games and their work time limits [9].

Marchand and Hennig-Thurau concluded that as the video game industry becomes a mass phenomenon and technological innovations allowing more players to enter the market and competitive industry, video game developers must keep professionalizing their business models to keep up with the race, and believed that creativity and innovation play a major role in the video gaming industry’s expansion [10].

From these discussions, it can be summarized that finding out whether how a video game was developed will determine its quality can be done by analyzing on how well video games released in the past years performing in the market, although the exact answer is difficult to determine due to the dynamic, ever-growing video game industry. Nevertheless, the answer is very helpful to determine the success and failure of a video game, which is important for video game developers as a basis for their activities. The results of this paper try to answer the question whether a video game will succeed or fail in a commercial market based on the development, marketing and life cycle processes. By using descriptive and comparative methods

2. Method
In this research, the author uses descriptive and comparative methods. The methods by drawing a comparison between variables involved in the development and marketing of video games such as the development period and the number of copies sold, which is then correlated with their respective critical reception so the relationship between the development process and the overall quality of a video game can be found. This paper Using descriptive methods because will facilitate this research in explaining the subject of video games will be analysis.

3. Results and discussion
In the past ten years, there are many video games released after going through various lengths of development time and widely varying qualities. For this research, the author uses 20 popular video games released from 2008 to 2018 as a reference (Table 1).

| Game                          | Developer     | Publisher      | Genre             | Released |
|-------------------------------|---------------|----------------|-------------------|----------|
| Grand Theft Auto V            | Rockstar North| Rockstar Games | Action-adventure  | 2013     |
| The Legend of Zelda: Breath of the Wild | Nintendo      | Nintendo       | Action-adventure  | 2017     |
| Call of Duty: Black Ops III   | Treyarch      | Activision     | First-person shooter | 2015     |
| Call of Duty: Modern Warfare 3| Infinity Ward | Activision     | First-person shooter | 2011     |
Table 1. Cont.

| Game Title                          | Developer/Publisher                                      | Genre                        | Year |
|-------------------------------------|----------------------------------------------------------|------------------------------|------|
| Assassin’s Creed Origins            | Ubisoft Montreal                                         | Action-adventure             | 2017 |
| God of War                          | SIE Santa Monica                                         | Action-adventure             | 2018 |
| Battlefield 4                       | DICE EA                                                  | First-person shooter         | 2013 |
| Uncharted 4: A Thief’s End          | Naughty Dog                                              | Action-adventure             | 2016 |
| Overwatch                          | Blizzard Entertainment                                    | First-person shooter         | 2016 |
| Counter-Strike: Global Offensive     | Valve Corporation                                        | First-person shooter         | 2012 |
| Red Dead Redemption                 | Rockstar San Diego                                       | Action-adventure             | 2010 |
| The Elder Scrolls V: Skyrim          | Bethesda Game Studios                                    | Action-adventure             | 2011 |
| The Last of Us                      | Naughty Dog                                              | Action-adventure, survival horror | 2013 |
| Persona 5                           | P-Studio                                                 | Role-playing game            | 2016 |
| (Japan)                             |                                                          | (worldwide)                  | 2017 |
| PlayerUnknown’s Battlegrounds       | PUBG Corporation                                         | Third-person shooter         | 2017 |
| Fortnite: Battle Royale             | Epic Games                                               | Third-person shooter         | 2017 |
| The Witcher 3: Wild Hunt            | CD Projekt Red                                           | Action role-playing game     | 2015 |
| Resident Evil 7: Biohazard          | Capcom                                                   | Survival horror              | 2017 |
| Batman: Arkham City                 | Rocksteady Studios                                       | Action-adventure             | 2011 |
| Fallout 3                           | Bethesda Game Studios                                    | Role-playing game            | 2008 |

From the author’s knowledge, there are many indie video game titles which may be considered to be included in this research, but the author decides against it to focus on the mainstream video game market. Furthermore, the author also excludes video games which lacks appeal and do not perform well enough in the market, such as Battlefield Hardline from Electronic Arts game production.

The author gathers all necessary data about the video games’ development and quality from various sources on the Internet and draws a comparison between them in the following three tables split into the respective games’ genres, such as action-adventure (including open-world, Table 2), shooter (including first-person shooter and third-person shooter, Table 3), role-playing game (Table 4) and survival horror (Table 5).

Things to note from the tables:

- Since the development process of each video game is too long and complicated to be explained in this paper, only the development time that is included in the following table.
- Average critical reception is calculated from the average aggregate score and review score of the video game, graded from 1 (lowest) to 10 (highest).
• The number of copies sold is calculated from the most recent data about the video game’s sales.

Table 2. Comparison between action-adventure games’ development and quality.

| Game                              | Development time | Average critical reception | Copies sold        |
|-----------------------------------|------------------|---------------------------|---------------------|
| Grand Theft Auto V                | 2008 – 2013      | 9.5/10                    | 100 million (2018) |
| The Legend of Zelda: Breath of the Wild | 2012 – 2017      | 10/10                     | 11 million (2018)  |
| Assassin’s Creed Origins          | 2014 – 2017      | 8/10                      | 3.8 million (2018) |
| God of War                       | 2014 – 2018      | 10/10                     | 5 million (April 2018) |
| Uncharted 4: A Thief’s End       | 2014 – 2016      | 9.5/10                    | 8.7 million (2016) |
| Red Dead Redemption              | 2005 – 2011      | 9.5/10                    | 15 million (2017)  |
| Batman: Arkham City              | 2009 – 2011      | 9.5/10                    | 6 million (2012)   |

Table 3. Comparison between shooter games’ development and quality.

| Game                              | Development time | Average critical reception | Copies sold        |
|-----------------------------------|------------------|---------------------------|---------------------|
| Call of Duty: Modern Warfare 3    | 2010 – 2011      | 8.5/10                    | 14.8 million (2018) |
| Call of Duty: Black Ops III       | 2012 – 2015      | 8/10                      | 15 million (2018)  |
| Battlefield 4                     | 2011 – 2013      | 8/10                      | 7 million (2014)   |
| Counter Strike: Global Offensive  | 2010 – 2012      | 9/10                      | No data            |
| PlayerUnknown’s Battlegrounds     | 2016 – 2017      | 9/10                      | 50 million (Windows and Xbox One, 2018) |
| Fortnite: Battle Royale           | 2011 – 2017      | 9/10                      | 125 million (downloads, 2018) |

Note: The mobile version of PlayerUnknown’s Battlegrounds had been downloaded 100 million times as of August 2018.

Table 4. Comparison between role-playing games’ development and quality.

| Game                              | Development time | Average critical reception | Copies sold        |
|-----------------------------------|------------------|---------------------------|---------------------|
| The Elder Scrolls V: Skyrim        | 2008 – 2011      | 9/10                      | 30 million (2017)  |
| Persona 5                         | 2008 – 2016      | 9.5/10                    | 2 million (2017)   |
| The Witcher 3: Wild Hunt          | 2011 – 2015      | 9/10                      | 10 million (2016)  |
| Fallout 3                         | 2004 – 2008      | 9/10                      | 12.4 million (2015) |

Table 5. Comparison between survival horror games’ development and quality.

| Game                              | Development time | Average critical reception | Copies sold        |
|-----------------------------------|------------------|---------------------------|---------------------|
| The Last of Us                    | 2009 – 2013      | 9.5/10                    | 17 million (2018)  |
| Resident Evil 7: Biohazard        | 2014 – 2017      | 8.5/10                    | 5.1 million (2018) |

From the tables above we can see that among all variables involved in the development and quality of a video game, all of them varies widely, and thus, the answer to the biggest question of this paper is uncertain. As explained before, technological challenges faced by a video game’s development process along with various subjective matters affect the prediction on whether a video game can be called a success or a failure.

The tables above also show that all of the listed video games can be said as performing quite well in the critic’s section, having an average critical reception of above 8 with The Legend of Zelda: Breath of
*The Wild* and *God of War* are tied as the highest overall, at 10/10. However, their sales vary considerably, with *Grand Theft Auto V* being the highest overall, at 100 million copies sold as of 2018, although *Fortnite: Battle Royale* is the highest if the fact that it is a free-to-play video game with 125 million downloads as of 2018 is ignored.

Further calculations based on the genre also comes with the following results:

- The listed action-adventure games overall take an average of 4 years to develop, has an average critical reception of 9/10 and sells an average of 21 million copies.
- The listed shooter games overall take an average of 2–3 years to develop, has an average critical reception of 8.5/10 and sells an average of 42 million copies.
- The listed role-playing games overall take an average of 5 years to develop, has an average critical reception of 9/10 and sells an average of 13 million copies.
- The listed survival horror games overall take an average of 3–4 years to develop, has an average critical reception of 9/10 and sells an average of 11 million copies.

4. Conclusion

It cannot be said for sure that a video game’s success on the market translates to its development process, which on most cases takes several years to complete, since even video games with a long and complex development ended up flopped in its sales, but the opposite is sometimes true; video games with short and less complicated development sometimes could be a hit. Nevertheless, the video game industry is truly unpredictable; we cannot certainly know how well a video game will perform unless by trying it out first, and whether the video game will be a success or a failure depends on how it was perceived by gamers and critics. This goes in line with one of the tenets of entrepreneurship: risk management since like any other business products, video games need to be managed carefully, utilizing any available strategies and calculating any kind of risks that the video game might face, as well as formulating the means to anticipate them.

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