American Stock Market: Video Game & Film Industry(2010-2015)

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*Abstract*— The Entertainment Industry has been changed in monumental ways though out the years, helped by the rise of technology. The two industries I would like to highlight are the production companies in film industry and videogame industry. The Developments in technology during the period of 2006 to 2015, allowed entertainment to reach new heights within the comfort of consumers own home, and develop new business models that would make the consumer more invested in their products. In this document I aim to outline the effects of key products of major players in both these industries, how these products were received and if they made any effect on the company’s stock market share price. Part of the time I chose was a volatile time in the market due to “The Great Recession” of 2009, where major products from these industries failed to show a clear statistical stock market increase.

Index Terms—Stock Market, Shares, Industry, Video Games, Film, Entertainment Industry.

# Introduction

The Entertainment industry is constantly evolving with the times, implementing new technologies and methods to make products more engaging, artistic, and easier to create and share. I will be doing an in-depth analysis on major players in both the film and video game industry. The company’s I have chosen are selectively picked to ensure their main source of income is in their respective field. I have selected the ten-year period of ‘2006 – 2015’ because of the major advances in the products and technologies used in these fields. I have gathered many datasets to achieve this analysis. These include Movie product data, Videogame product data, and Stock market price data.

The Main Objective was to see if these high value target products produce an effect on a company’s stock prices in the American market. Stock price are based off a supply and demand, where shares in high demand will become more expensive and shares in low demand will lose market value. Factors that would influence this supply and demand are, the company’s earning, new product announcements, popularity, new programs, yearly over performance, yearly under performance, and even being mentioned in the news. I had a hypothesis I wanted to test which was: highly grossing products will have direct effects on a company’s share price. I personally find it easier to predict the next big film or device, rather than a company sales performance or changing management.

The Company I have decided to analyse using the collected data frames are well established company in both the film and video game industry. For the Videogame industry, I have selected ‘Activison Blizzard’. For the Film Industry I have selected ‘Disney’. ‘Sony’ is a specific company I wanted to analyse because of its involvement in both markets, as well as producing some technologies and hardware that has been widely adapted by both industries. These selected companies can give a wide range of results for analysis, on the successes and failures of their business model.

# Litriture Review

## Video Game Industry Overview

The 2006 start date for analysis, is the start of a new generation of consoles that hit the market. This brings along new era in the industry, because most developers cater to the system requirement of these machines as it has the biggest player base.

Sony is part owner of an emerging disc technology called ‘Blu-ray’, that is now widely accepted as the new ‘DVD’. 2006s newly released consoles adopted this new disc format. Although, online gaming was not introduced during this generation of devices, it was highly popularised. These online features also allowed console providers (‘Microsoft’, ‘Sony’, ‘Nintendo’) to sell their entertainment software straight to the customer with the use of the online store.

‘Activison’ made many changes to their business tactic over this time, including the adoption of the highly profitable ‘microtransactions’, and a yearly release schedule for high value franchises.

2015 is also a significant year in the gaming industry, as it marks the 1 year of a new generation of gaming consoles. It is interesting to see how companies have changed their business and marketing strategies over these generational leaps.

## Film Industry Overview

The period of 2006 – 2015, Is very interesting for the film industry because of new production models, streaming services, and technology used. Franchise based models to films such as ‘Disney’s’ popular and profitable ‘Avengers’ franchise, changed the way films were planed by production companies forever. Streaming services popularised in 2007 by ‘Netflix’ has changed how easy it is to watch and discover new films in the comfort of your own home. Technology advancements in CGI (Computer Generated Imagery) allowed new worlds to be created faster and more realistic than ever before. Technology required to create 3d animation was becoming more available to many studios which phased out the major animated features containing traditional 2d animation

## Video Game Industry Time Period Analysis

In 2006 Video Gaming Industry had reached a record-breaking year in sales. “In all, hardware sales surged 43 percent to $4.6 billion in 2006 and software sales rose 6 percent to $6.5 billion” (‘2006 A record year for Video Game Industry’, CBS NEWS, 12.1.2007) [1]. On the Hardware side, this due to the new consoles being released in November, Microsoft’s ‘Xbox 360’, Sony’s ‘PlayStation 3’, and Nintendo’s ‘Wii’, also due to Sony’s previous Console ‘PlayStation 2’ being immensely popular at the time. Video game software also had many highly profitable titles created.

The Industry kept on its highly profitable streak of the previous year especially with software products. Game software accounted for nearly half of the market’s revenue, which is quite remarkable in a year that contained the first year of new generation hardware. “The Entertainment Software Association announced today that total sales for 2007 were $18.85 billion, with $9.5 billion of that spent on games (both PC and console) and $9.35 billion on consoles” (‘Growth of gaming in 2007 far outpaces movies, music’, ,arstechnica.com,25/1/2008) [2].

2008 was a year of economic decline for all industries due to the ‘The Great Recession’, fortunately for the gaming industry this did not seem to slow down the software sales. “For the year, software sales hit nearly $11 billion, a 26 percent increase from 2007. Hardware sales jumped 11 percent to $7.81 billion” (NBC News, 16/01/2009)[3]. The software sale increase is partly from “Call of Duty: World at War” published by ‘Activison Blizzard’.

2009 finally show decrease to the Industries annual rapid growth, ‘The Great Recession’ finally caught up with the industry. “…generated revenues of close to $19.66 billion…The total console, portable and PC game software industry generated $10.5 billion, an 11 percent decline vs. the $11.7 billion generated in 2008” (2009 U.S. Video Game Industry and PC game software retail reach $20.2 Billion, npd.com ,12/1/2010)[4]. Although Companies such as ‘Activision’ releasing ‘Call of Duty: Modern Warfare 2’ which sold 24 million units on console alone.

In 2010 we see another decline in the industry seeing sales down in every aspect beside ‘Xbox 360’ console sales in December of that year.  “video game sales for the year (2010) were $18.58 billion” (Game Sales Shrunk, CNET, 13/01/2011) [5]. This Is quite a considerable decline over the past two years, considering the heights of the industry in 2008.

2011 sadly, was another year of decline. “…fell 8 percent to $17 billion last year, compared with $18.6 billion in 2010” (theHollywoodReporter.com, 12/1/2012)[6] .

2012, things started to pick back up again with the industry from the massive success of particular mobile games such as ‘Clash of Clans’. The industry is thriving once again with “Around 42,000 people now work in the US games industry, up 30 percent from 2009” (Nick Statt,11/11/2014) [7].

2013 marked a new generation for consoles with Sony releasing the ‘PlayStation 4’ and Microsoft releasing the ‘Xbox One’. This gave the industry great growth with “game revenues will grow to $70.4 billion worldwide this year, representing a 6% year-on-year increase” (Global Games Market Report Infographics | 2013**,** newzoo.com, 15/7/2013)[8]. According to newzoo.com, 32% of the games market is based in America, estimating at $ 22.8 billion, and a 2% increase.

2014 did not have significant growth, beside for the new consoles. “That boost in hardware helped the industry squeeze out a 1 percent total increase in US retail sales”, (Nick Statt, CNET, 15/01/2015)[9] . This was especially strange for a first year of a new generation of consoles.

2015 definitely picked up the slack, compared to 2014’s disappointing returns. “Total revenues for the industry in the U.S. hit $23.5 billion last year—a 5% jump over 2014”, (Chris Morris, FORTUNE, 16/2/2016) [10].

## Film Industry Period Analysis

2006 was an Interesting year for the movie Industry. ‘Disney’ released their Second Entry to their Pirate theme action adventure ‘Pirates of the Caribbean: Dead Man’s Chest’, totaling around 136 million in its first opening weekend. This film was a leap forward for Visual Effects (VFX) and Motion Capture (Mocap) in Film, with the performance Capture of ‘Bill Knightly’ as Davy Jones. This was also the year ‘Disney’ acquired the revolutionary 3D animation studio ‘Pixar’, who also released third 3rd highest grossing film of the year “Cars”.

2007 was a monumental for new trends in the way the industry distributed films, and how the viewer would watch them. Netflix, a DVD postal rental service moved into online streaming of video. In the coming year Netflix would become a top Investment in the American stock market because of these decisions. ‘Sony’ ‘Spider-Man 3’ released, grossing as $894 million.

2008 marks the starting year for ‘The Great Recession’, but this did not stop ticket sale for the year. “ticket sales this year up 17.5 percent, to $1.7 billion, according to Media by Numbers, a box-office tracking company” (In Downturn, Americans Flock to the Movies, nytimes.com,28/02/2009) [11]. Some monumental releases this year ‘Marvel’s’ ‘Iron Man’ and ‘Sony’s’ ‘Hancock’. Although the amount of tickets sold was astounding for a recession, the industry’s Market did not increase.

In 2009, ‘Disney’ acquired ‘Marvel Studios’ for 4 Billion, this marked the start of a new trend in the Industry of the franchise film which would be adopted by many other company’s focused on super hero films over the next decade. ‘Fox’ released ‘Avatar’ with an incredible worldwide gross of $2.7 billion and remained the highest grossing film up until 2019. Avatar set a new standard of excellence for VFX in and Mocap in the film industry. ‘The Princess and the Frog’ by ‘Disney’ this year started to show less and less returns on traditional 2D animation compared to their new 3D animation studios. Although it was still a commercial success grossing $104 million, it was part of the downfall of the medium as 3D animated feature ‘Up’ grossed $735 million.

2010 was a big year for ‘Disney’ distributing the two highest grossing films of the year, ‘Toy Story 3’, and ‘Alice in Wonderland’, as well as others in the top 10 such as ‘Tangled’ and ‘Iron Man 2’.

2011 had quite a fall off in sales compared to the year before with “4.5 percent falloff from 2010…North America are running about $500 million behind last year” (A Year Of Disappointment at the Movie Box Office, nytimes.com,25/12/2011)[12]. Although some success was found for ‘Disney’ producing “Pirates of the Caribbean: On Stranger Tides” which grosses $1 billion but didn’t receive the critical acclaim of the earlier entry’s into the series. ‘Disney’ released “Winnie The Pooh”, one of the last 2d animated features made by them, which had a production cost of $30 million and returned $50 million, that’s only 1.7 times production cost [13].

2012 was a monumental occasion for franchise-based movie plans as “The Avengers” combine several of ‘Disney’s’ franchise movies star from the cinematic universe and placed them all in one movie. “The Avengers expected viewers to have seen at least a few of the standalone titles in order to understand the team dynamics”(Like it or not, The Marvel Empire Redefined Cinema this Decade, The Verge,12/12/2019) [14]. Although In terms of Americas Hollywood hold over the film industry was at an all-time low of 63%, because of the growth of popular studios overseas. The American market did grow for the first time since the recession started. “a resounding year for US domestic it was: it grew for the first time in four years, by 6%, from $10.2bn to $10.8bn” (Hollywood’s hold over global box office – 63% and falling, The Guardian,3/4/2013)[15].

2013 was a year where Disney dominated the top 10 grossing films of the year, with ‘Frozen’, ‘Iron Man 3’, ‘Monsters University’, and ‘Thor: The Dark World’.

2014 released notable films such as the ‘Guardian of the Galaxy’, and ‘Maleficent’ from ‘Disney’ grossing $772 million, and $758 million.

2015 was a good year for growth in the industry. “Revenue at the 2015 global box office crossed $38 billion for the first time in history, surpassing last year's record $36.7 billion” (Global 2015 Box Office: Revenue Hits Record $38 Billion – Plus, the Hollywood Reporter)[16]. This was helped by many American titles ‘Disney’s’ ‘Star Wars: The Force Awakens’, ‘Inside Out’, and ‘Avengers: Age of Ultron’.

# Data Used

I found a dataset called ‘Video Game Sales’ on ‘Kaggle’ [17], which I downloaded from the website. This provide me with data for videogames with sales greater than 100,000 copies, which was perfect when analysing big industry games. This Provided me with Rank, Name, Platform, Year, Publisher, and Global Sale. First, I would define a new dataset to only contain game from the years of 2006 – 2015. After that I would separate the game by ‘Publisher’, into separate datasets (e.g. Activision\_vg). From there I would group by year and multiply the Global sales by 50 (e.g. Activision\_vgTR), also I would group product by year and receive a total number of products (e.g. Activision\_vgTP). As some games would have different data entries for each platform release to have a better view of total revenue generated by each product, I would sort the products by name and calculate the total revenue(e.g. ActivisonSameGame).

I found a dataset on ‘Kaggle’ called ‘IMDB movies metadata’ [18], that would give me a lot of the data collected by IMDB on high grossing films. I specifically used the title, release date, production companies, and the revenue columns. I sorted by Revenue and selected the top 50 for my reference of the top films (Top50Movies). I sorted the original dataset for the years 2006 – 2015 and extracted the production company for each company for its own data frame (Disney\_movies). I sorted by release date year and store the total revenue (e.g. Disney\_mTR), I also sorted by year to gather the total products per year (e.g. Disney\_mTP). To find the top movies easier for certain companies easier, I would extract companies’ names from the production company column in Top50Movies and store (Disney\_moviesTM).

I downloaded ‘Huge Stock Market Dataset’ from ‘Kaggle’[19], which provided me with massive amount of data on publicly traded companies in the American market. This dataset would provide me with data for each trading day such as Date, Open, High, Low, Close, Volume, OpenInt. First thing I did was create datasets for each company containing the selected years of 2006 – 2015. I also made each entry to have two more columns contrasting the price change from the current entry to the previous or to the next Opening price, called diffPrev, and diffNext (e.g. sony\_stock)

I web scaped two datasets from ‘Wikipedia’ ‘List of best selling video games’[20], ‘topGamesWiki’ and ‘List of highest-grossing films’[21] ‘topMoviesWiki’. I found the scraped data for ‘topGamesWiki’ to be very useful as it contained the name of the production companies. For the ‘topMoviesWiki’, I did use it as a reference for my ‘Top50Movies’, but as it didn’t contain the production companies I found it easier to create this list myself from an unedited ‘IMDB movies metadata’ [18].

# Methodology & Implementation

The Approach I took to this data was using the KKD to analyze the effect certain high value releases had on the company’s stock.

I have created a selection of various datasets that would compliment both industries and make it easier to Analyze them in the same way. For the sake of consistency, I have formatted and cleaned the data frames for both industries using similar methods to create my Preprocessed data.

Data I was looking for a number of released products from the company each year, which I have achieved and displayed the results using a bar chart. Total revenue for each year generated from these products which was detailed in a line graph that I thought was easy to compare with the Total Products bar chart. Both Charts have been created with function I wrote to make it easier in the future to provide these graphs.

I have also automated a process for finding the Open Price, the Closing Price, the Price Change between these two points, and the percentage difference. All you would need to input is a valid trading day of that year, for opening data and closing date, and the stock dataset. With These result I could form a knowledge base when comparing to the stock market graph.

# Implementation

I wrote those statistical analysis in R studio using R scripting. I have five R documents. ‘Vg data extraction’ is for Video Games data, creating the data frames for easy analysis over the period, also I can clean the data to input a data frame into a function for creation of my line plot Total Revenue, and my bar chart for Total Products. ‘M data extraction’ is for Movie data, creating data frames for these various functions. ‘areaCharts’ contains the function required to make the bar charts for Total Products, and the line chart of Total Revenue. ‘webScrape’ is used to receive the Wikipedia tables. ‘St data extraction’ is for cleaning and pre-processing the Stock data for each company, as well as the function that find Open Price, Closing Price, Price Difference, and Percentage Change. I used 5 R packages, ‘Tidyverse’ to help me clean the data, ‘Rvest’ to help me web scrape, ‘Readr’ to easily import csv files, ‘ggplot2’ to create the graph images, ‘dplyr’ for data frame manipulation.

# Results and Findings

## Activision (Video Games)

**Chart, histogram

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**Figure 1: Activision Stock**

**Chart, line chart

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**Figure 2: Total Revenue per year from products**

**Chart, histogram

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**Figure 3: Total products**

There is a strong correlation between products released and the total revenue of each year. Each fluctuation in the graphs are clearly directly related. One thing we can take note of is that Revenue generated in a year from software sales does not directly correlate to stock market rise.

Activision is a rare company with 4 game in the top 50 most selling games list on Wikipedia (as seen in my data frame Activison\_TS). The Title are ‘Call of Duty: Modern Warfare 2’ released November 10th, 2009, ‘Call of Duty: Black Ops’ November 9, 2010, ‘Call of Duty: Modern Warfare 3’ November 8, 2011, and ‘Call of Duty: Black Ops II’ November 12, 2012.

‘Call of Duty: Modern Warfare 2’ was released in Q4 (Quarter 4) of 2009 and was able to secure the sale of 25 million copies sold since its release. I have calculated an estimate earnings of $1254.5 million total. At the start of Q4, first recorded 2009-10-01, open price in the American stock market for 1 share was $11.35. The closing on the final day recorded of Q4 2009-12-31, was surprisingly negative with the difference amounting to $-1.056, at a quarterly percentage loss of -9.75%.

‘Call of Duty: Black Ops’ was also released in Q4 of the business year, in 2010. It was able to secure 30.9 million copies sold, with an estimate earnings of $2382.5 million in software sales. At the start of Q4, first recorded 2010-10-01, open price in the American stock market for 1 share was $ 10.102. The closing on the final day recorded of Q4 2010-12-31 was $ 11.53, the difference amounting to a gain of $1.428, at a quarterly percentage gain of 13.2%.

‘Call of Duty: Modern Warfare 3’ was also released in Q4 of 2011. It was able to secure 30.97 million copies sold, with an estimate earnings of $1556.5 million in software sales. At the start of Q4, first recorded 2011-10-03, open price in the American stock market for 1 share was $ 11.145. The closing on the final day recorded of Q4 2011-12-30 was $ 11.587, the difference amounting to a gain of $0.442, at a quarterly percentage gain of 3.88%.

‘Call of Duty: Black Ops II’ was also released in Q4 of the business year, in 2014. It was able to secure 29.72 million copies sold, with an estimate earnings of $1486 million in software sales. At the start of Q4, first recorded 2012-10-01, open price in the American stock market for 1 share was $10.781. The closing on the final day recorded of Q4 2012-12-31 was $10.132, the difference amounting to a loss of -$0.649, at a quarterly percentage loss of -6.2%.

Although these games sold very well, the market price increase is not as impressive. This could be due to many factors, these games are very expensive to make and even more expensive to market “the launch budget was around $200 million”, (Most Expensive Video Games Ever Made, Business Insider, 8/07/2014) [22]. Activision in that time would produce more games then their “Call of Duty” franchise. As we got closer to 2015, they streamlined their products, keeping only profitable franchises.

If you noticed the sudden rise in Stock price, beginning in 2013, This is more than likely from less products being produced but as well as implementing “Micro Transactions” into their software. These are payments you can make for currency or items to use in a video game. This was first introduced in 2013 ‘Call of Duty: Ghosts’ and is highly profitable practice.

## Disney (Film)

Chart, line chart, histogram

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**Figure 4: Disney Stock**

Chart, line chart

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**Figure 5: Disney Total Revenue per year from products**

**Chart, bar chart

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**Figure 6: Disney Total Products bar chart**

There is some correlation between the dips and rises between the total products and total revenue, but as time went on Disney seem to release less products per year. Total number of products releases has no correlation to the stock market line plot., but I do see a rising trend in both Total Revenue and line plot charts.

Disney is a very lucrative company. and have a strong presence in the film industry. In the time 2006 – 2015 alone, Disney owns 17 out of the top 50 film of all time. I will be analysing, the top Films from each of the studio owned by Disney for this period. ‘Lucasfilm’ (acquired 2012) 2015’s ‘Star Wars: The Force Awakens’ worldwide gross of $2,068,223,624 worldwide. ‘The Avengers’ released in 2012 from ‘Marvel Studios’ (acquired 2009), grossing worldwide $1,519,557,910. ‘Pixar’ (acquired 2006) ‘Toy Story 3’ released 2010, with worldwide gross of $1,066,969,703. And the in-house studio “Walt Disney Pictures” animated feature ‘Frozen’ release in 2013 to worldwide gross of $1,274,219,009.

‘Marvel Studios’ was purchased by the Walt Disney Company in 2009 by the ‘The Walt Disney Company’ for $4 billion. One of the most profitable features this studio released for Disney is ‘The Avengers’ released in 2013-11-27 in Quarter 4 of the business year. 2012-10-01 open Price was $48.547 and closing on 2012-12-31 $46.918. That is a total loss of $1.629 with a percentage loss of -3.41%. This could be from the movies budget expenses being $220 million, as well as having to make up for under performing features in the Marvel Cinematic Universe.

‘Toy Story 3’ released on 2010-06-16 at the very end of Q2, it was made by Pixar who were acquired by Disney in 2006 for $7.4 billion. I think a more accurate representation of stock market changes is from Q2’s 2010-06-16, to the end of Q3, as most sales are in opening weekend, but movie ticket sales and related product sales increase for around a whole month while in cinemas. Stock Open Prices on 2010-06-16 was $31.116, and at the end of Q3 2010-12-30 stock closing price was $34.21. That a total increase of $3.094 with the percentage increase of +9.47%.

On 2013-11-27, ‘Frozen’ was release in Q4 of the business year. Opening Stock price of 2013-10-01 was $60.657 and Closing 2013-12-31 at $72.882. This is a monumental increase of $12.225, which is a total of +18.3% increase. This is not surprising as ‘Frozen’ is the top grossing animated film to this this day.

In 2015, ‘Star Wars: The Force Awakens’ released on 2015-12-15 and made by Lucasfilm a recent acquirement of the Walt Disney Company in 2012 for $4.05 billion. On open date 2015-10-01 stock price was $100.05, Closing on the 2015-12-31 at $102.76. This is underwhelming $2.71 stock price increase totalling at an increase on investment of 2.67%. This is incredibly disappointing for the 4th highest grossing film in history to this day. I did some extra calculation from 2015-12-15 (release date) to 2015-12-31 (end of Q4), only to find a decrease of

-6.41%.

Although there are many factors at play here for The ‘Disney’ corporation, such as how their other movies performed in the box office that year, did their TV features get good ratings, and did their collectables and toys sell well. This was Quite shocking to see the minimal gains in some high value target productions. Disney’s film Production costs have soared to colossal heights “On average, the production budget for a Marvel Cinematic Universe is $190,350,000 - with the highest being $330,600,000”, (The Marvel Cinematic Universe in Numbers, entertainment.ie,2019)[23].

## Sony (Film & Video Games)

Chart, histogram

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**Figure 7: Sony Stock**

Sony is an Interesting Company to analyse, as it has stakes in both entertainment industries, Film and Video Games. Sony is also the Creator of their own Gaming Console the ‘PlayStation’, and they have taken a market strategy where they would fund and publish in-house and acquired studios, to create software for their Consoles as an exclusive product. Sony also has taken the same concept to Their Film market strategy purchasing studios and creating in house studios to be published by them, but these product are less exclusive as they are released in most major cinemas across the globe.

**Sony Video Game Market**

**Chart, histogram

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**Figure 8: Sony Video Game Total Revenue**

**Chart, bar chart, histogram

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**Figure 9: Sony Video Game Total Products**

Sony’s Gaming Division struggled over the period of 2006-2015, this was because of many factors. The ‘PlayStation 2’ was released in 2000 and was extremely successful with a huge amount of games for it 6-year life cycle and continued selling 2 years into the next generation of consoles. The ‘PlayStation 3’ was released at the start of our period in 2006, Sony made many bad decisions, in many ways the architecture for this new console was more difficult for external software developers to create/port their products to, they release the console for $599, while their competitor “Xbox 360” was released the same year for as low as $299. “widely regarded as the least successful of all of Sony's home console efforts” (PS3 Launch Price Was a Mistake: Sony Studios Boss, Gadgets360.com,11/7/2018)[24, p. 3].

There is a slight correlation between the total products release and the revenue for Sony’s Video games. Although I do not see anything of notable mention when comparing to the Stock price line plot.

Sony surprisingly has one game ranked 47th on Wikipedia’s Top selling games list, ‘The Last of Us’ with a total for 20 million sales this was over the course of two consoles ‘PlayStation 3’ and ‘PlayStation 4’. For our analysis of ‘The Last of us’ we will see how it performed on both consoles regarding Stock market Quarter prices. We will also be analysing both consoles released in this period on a yearly basis as they are major hardware releases generating sale throughout the year. We will analyse from their release to the end of the next year’s quarter.

‘PlayStation 3’ released on 2006-11-11, but we have no market data until the 2006-11-13 with an Open price of $39.014, end date of Q4 2007-12-31 closing Price was $52.755. The increase in stock price was 12.74 with a percentage of +29.95%. This does not surprise me as the ‘PlayStation 2’ was still selling well as well as some hardware sales for the ‘PlayStation 3’. “PlayStation 2… 1.4 million units during December amid widespread shortages of its successor, the PS3, which sold 490,700 units in December and 687,300 since its November launch” (2006 A record Year For Video Game Industry, CBS,01/12/2007)[1].

‘The Last of Us’ released on ‘PlayStation 3’ 2013-06-14 in Q2. As this is at the end of a Business Quarter, I think its more representational of the influence it had by measuring the Stock market difference up until the end of Q3 2013-09-30. Opening Price on 2013-06-14 was $20.129, closing on 2013-09-30 at $21.36. This was a total increase of $1.231, at a percentage gain of 5.93%.

The ‘PlayStation 4’ released in Q4 on 2013-11-15, once again we will be analysing the data over the course of year of sales, up until 2014-12-31. Open Price on ‘PlayStation 4’ released date was $18.441 and closing price on 2014-12-31 was $20.318. That a total increase of $1.877 and a percentage increase of 9.68%.

‘The Last of Us’ released on ‘PlayStation 3’ 2014-07-29 in Q3. The opening price in Q3 2014-07-01 was $16.735, closing at 2014-09-30 for $17.906. That is a total increase of $1.231, totalling at a 6.76% increase.

There are many factors that were affecting ‘Sony’s’ stock market growth rate for these monumental products. ‘The Great Recession’ of 2009 effected Sony sales of the ‘PlayStation 3’, and it seemed hard for their gaming division to gain traction with less devices in peoples living room.

**Sony Film Market**

**Chart, line chart

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**Figure 10: Sony Film Total Revenue**

**Chart, bar chart

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**Figure 11: Sony Total Products**

Sony’s Film Division has been around for a long time, with acquiring ‘Columbia Pictures’ in 1989. Since then they have manged to create many studios under the name of ‘Sony Pictures Motion Picture Group’. The have produced many franchises in popular Films such as “007 James Bond”, and own exclusive rights to the character “Spider-Man”. They have one film in Imdb ‘Top grossing films’, ‘Spectre’ from the James Bond Franchise. ‘Spider-Man 3’ is the second highest grossing film of Spider-man character (Disney’s ‘Spider-Man: Far from Home’ is first). Sony Also has an Animation division called ‘Sony Pictures Animation’ founded 2002, they created the highly profitable ‘The Smurfs’ in 2011.

‘Spider-Man 3’ produced by Columbia Pictures was the last in a trilogy released on 2007-05-04 in Q2 of the business year to total revenue of $890 million. The Start date of Q3 2007-04-02 open price was $ 48.836 and closing on 2007-06-29 the price was $ 49.908. This was a $1.231 increase with a percentage of +2.17%. This Film was very lucrative for the box office but was trashed by critic across the board.

‘The Smurfs’ released in 2011-08-10 Q3 of the business year as a summer kids’ film and grossed $563 million. Q3 opened at the price of $25.749 on 2011-07-01 and closed at $18.517 on 2011-09-30. This was a loss of $7.232 for Q3 2011, that -32.67%.

‘Skyfall’ released in 2012-10-26 Q3 of the business year, grossing $1.1 billion. Q3 opened at the price of $11.696 on 2012-10-01 and closed at $11.045 on 2012-12-31. This was a loss of $0.651 for Q3 2011, that -5.72%.

I think it clear to say that some of ‘Sony’s most profitable movies did not have much effect on Stock market share increase.

##### Conclusions and Future Work

I feel as I have disproved this hypothesis that a highly profitable product in the Game and Film Industry would result in higher stock market value. It is a factor for more people to want to invest in a certain stock through exposure, but it is not the only factor that could affect the stock market. For myself I have found this strategy marginally profitable through my own investments, I chose this project to test my theory because of my small earnings of 9.79% over the course of two months. I feel like I have a good infrastructure in my R project, for finding price difference between two dates which could be developed further to give more in depth statistical knowledge of price change over time periods.

I started the project thinking I would find information on the rise of the video game industry and the slowly declining film industry. I realised quickly that these industries are not affecting the other on in any marginal way to form a solid statistical representation.

If had more time to develop the project further, I had created 5 more data set on different companies in these industries. I think I could have found more data that will answer my hypothesis more definitely. I have the functions required to analyse the products of these companies, just not enough time to write up about my findings for their company and their key products over this period

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