MBAS902: Assessment 1

Hollywood Movie

Name: Chinmay Datar

Student No.: 6956361

Word Count: 2300

Introduction

Millions of people watch movies in theatres every year and the number keeps increasing every year. With more than 300 Hollywood movies every year, people never run out of movies to watch in theatres. People are willing to spend $30 to $40 on good, big budget films and additionally spend on popcorn and cold beverages to consume during the movie.

Hollywood has given the world a big number of big budget, blockbuster movies with A-list cast and big names for producers and directors. With advancement in technology sci-fi movies have reached new heights by creating a world beyond our imagination with special effects. To produce such a film requires a big budget and investors expect a huge return on their investment. This is why investing in movies is a risky business. The movie needs to have an appealing story, reach the right audience and be available to as much public as possible. This way the investors make profit and get high return on investment. This is why investors need to be sure what kind of movie to invest it for it to be a good investment. Therefore, analysing the dataset and learning about the trends in the industry will help investors redirect their resources in the right project and generate optimal profit in the film industry without incurring losses.

Being an employee of MoCo organisation I will analyse the dataset containing details about movies between 2000 and 2010. By visualising the data and creating interactive dashboards we shall get gain insights about what factors contribute to the success of a movie. Using this MoCo can invest in movies which have higher chances of being successful. This will lead to greater profits for the organisation and help find the trend for the coming years.

Methodology and Aim of the Analysis

We use visual representations to explore and analyse the data. We use bar chart, pie chart, tree map, correlation matrix, word cloud, etc, to visualise the trends in the film industry, and then to find the factors that affect film's box office performance. We will then make an ensemble of all these factors that can help the organisation select the right movie ideas to invest in. Our aim is to help the organisation find movie ideas that could potentially be more profitable than the rest, so the probability of investing in an unsuccessful movie is reduced.

Data Pre-processing

1. Changes of column names

Original Name	New Name
Gross box office	Revenue
Estimated Budget	Budget

2. Calculated item:

   Profit= Revenue-Budget

3. Custom Category:
   a. Movie success: Box office class < 5 = Fail

   Box office class > 5 = Successful
   b. Genre group: Concatenated all genre groups into a single column

4. Report Filters: Report filters have been used for years and box office class of the movies.

   Rest of the filters are localised to the individual pages.
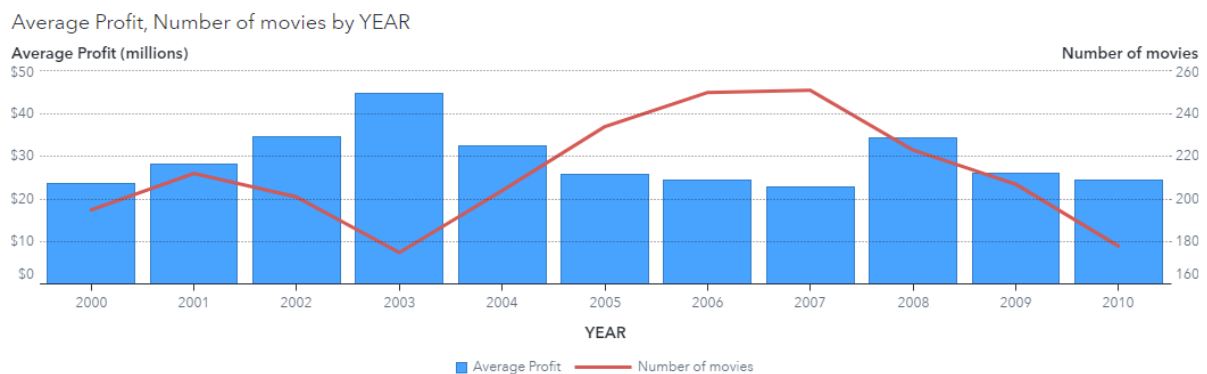
Findings

1. **Trend over the Years**

Fig. 1: Average profit and total number of movies per year

Fig. 1 is a dual axis bar-line graph with line representing number of movies in respective years and bars representing the average profit of that year.

It is evident from the above graph that 2003 is the year with highest average profit ($45million) and also the year of lowest number of movies (175) in any year. In 2007, maximum number of movies (251) were made in any year but also has the lowest average

profit ($23million). Overall, average profit seems to be inversely proportional to the number of movies made in a year.

This inverse relation can be explained by simple reasoning. Since MoCo organisation invests in more movies spread across different genres leading to high expenditures and ineffectiveness since the target audience is not defined (discussed later). MoCo organisation's initial marketing strategy seems to be inefficient as with investments in a greater number of numbers their profit decreased.

However, after 2003 with highest profit in the time period, MoCo understood the trend and invested in the right number of movies to have higher profit. However, they invested in continuously higher number of movies between 2004 and 2007 with 2007 being the year of lowest profit in the 10 years. Between the years 2008 and 2010 they adapted to the changing trends and invested in less movies leading to higher profits with average of 200 movies per year and average profit of $28 million per year.
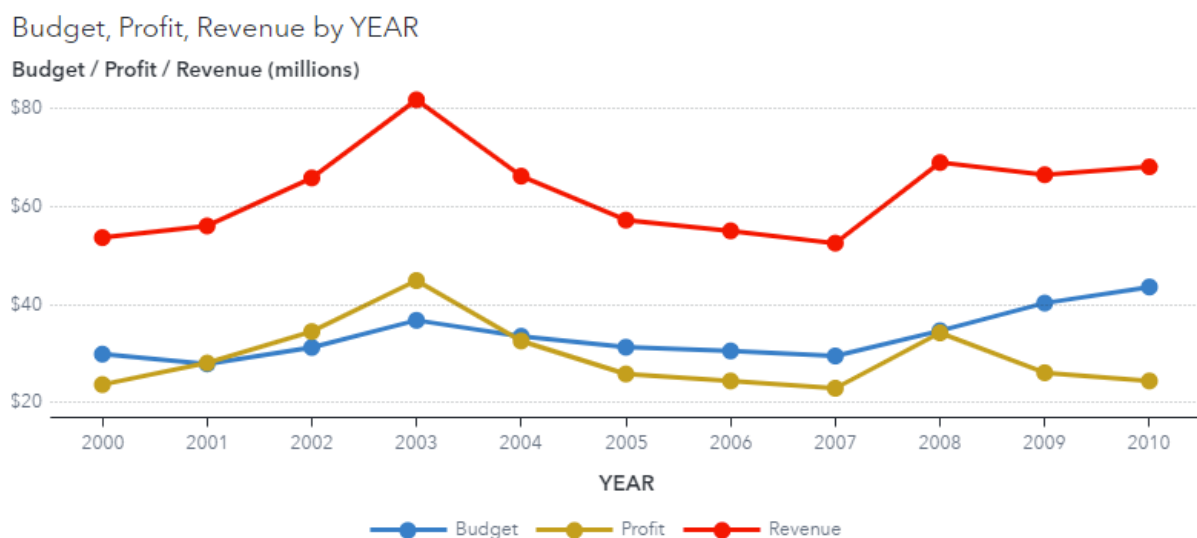

Fig. 2: Average budget, Revenue and Profit over the years

In fig. 2 we can see the that the profit has a repeating trend peaking twice, once in 2003 and then again in 2008. However, MoCo has maintained its yearly budget between $30 million and $40 million over the time series. The years with the highest profit and revenue are also the years where the budget is increased slightly than last years. Investing in many genres did not yield the organisation the profit they were looking for. Although the budget increased by $10 million over three years of 2008 to 2010, the number of movies the organisation

invested in reduced. This shows that they had adjusted their investment strategy to find the right movies to invest in and reach the target audience. The organisation attained a consistent revenue of $67 million while investing in an average of 200 movies per year.

2. **Analysis of Factors affecting success of a movie**

    a. **Effect of Genre on the success of movie**

Genre Analysis

Number of movies by Genre group
Number of movies

- Other 1.1%
- Thriller 1.9%
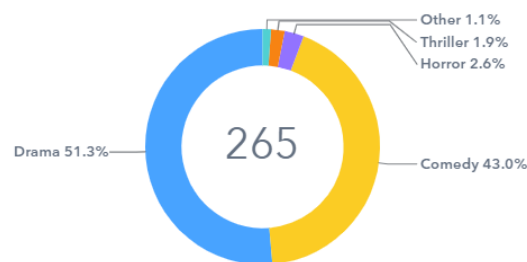- Horror 2.6%
- Comedy 43.0%
- Drama 51.3%

265

Fig. 3: Top 5 movie genres

Most common genres MoCo has invested in are Drama and Comedy as can be seen in fig. 3. 90% of the top 5 genre movies are under these two genres.
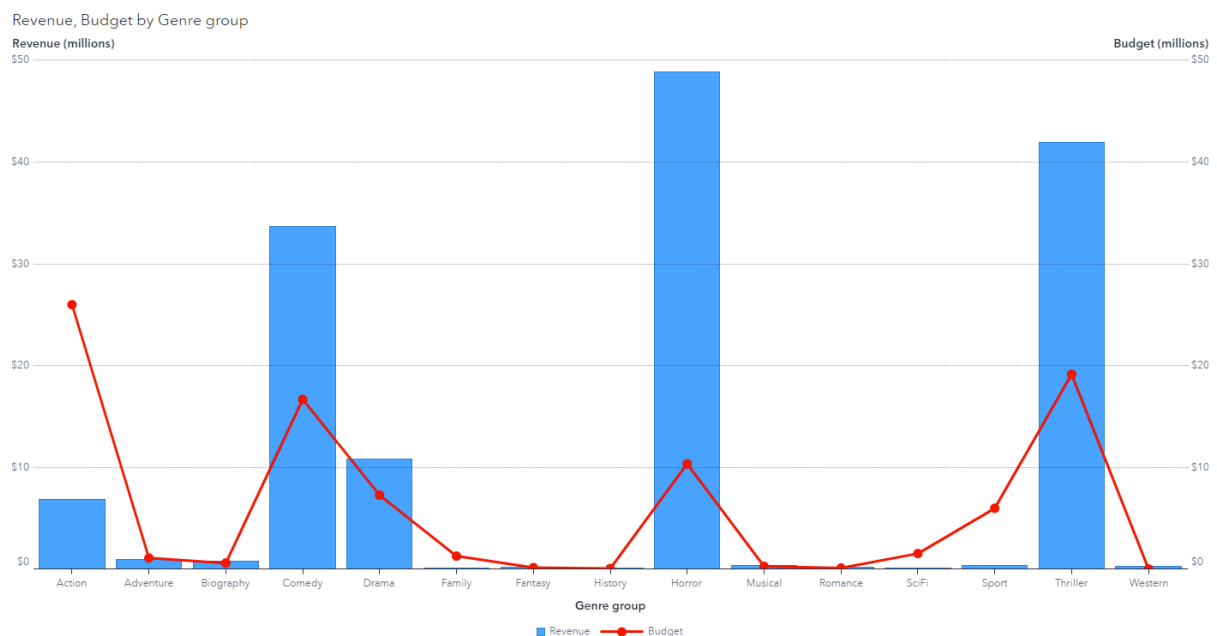

Revenue, Budget by Genre group

Fig. 4: Revenue, Budget by Genre

Fig. 4 shows the individual genres of movies against their revenue and budget. To make it easy to read both the axes have been synchronised. Drama and Comedy are most produced genres, yet they don't produce optimum profits. Horror and Thriller have the highest revenues with horror having the lowest budget among the three and consequently highest profit followed by thriller. Drama is also a profitable genre for the company. It is also note-worthy that action genre by itself suffers huge losses. While the budget for action movies is 2.5 times the budget producing a horror movie, yet the revenue is less than 20% than that of horror.

This indicates that investors expect action movies to be successful but looking at the above graph suggest that no action movie has made profit during the years of 2000 through 2010.

Genre Combination Analysis

Not all movies belong to only one genre. Some belong to two or maybe more genres. Fig. 5 shows the top 20 movie (based on profit) genre combinations with size representing the number of the movies in that genre and the color representing the profit. It can be noticed that Action-Adventure-Fantasy is has the highest number of movies (9) over the period of 10 years while the genre group with highest profit is Adventure-Family-Fantasy-Mystery ($640 million) with only 6 movies over the time period. It should be noted if the organisation only invests in Action genre movies it suffers a loss, but Action combined with other genres are highly profitable. Genre group which are highly profitable have the keywords: Action, Adventure, Comedy, Drama, Family, Fantasy, Mystery, Thriller.
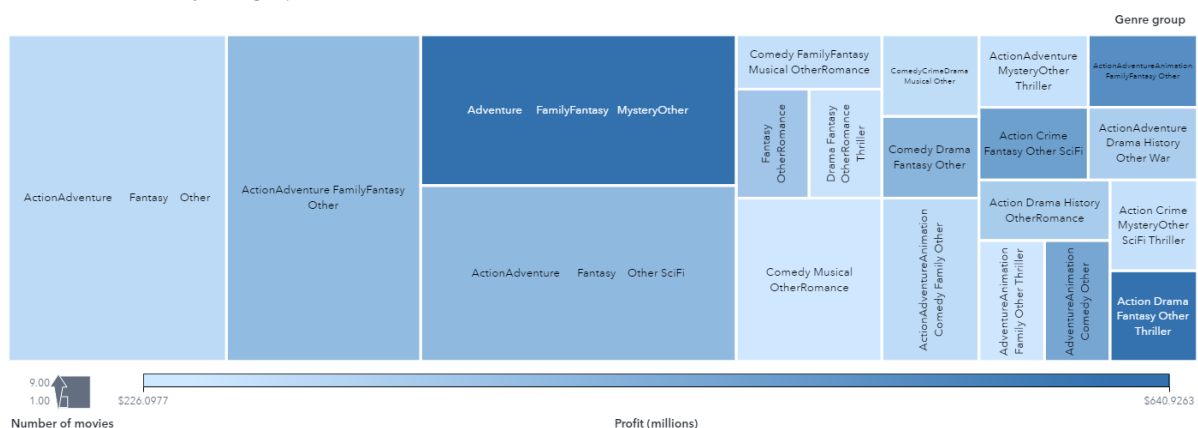

Fig. 5: Top 20 movie genre groups by profit

After filtering the data for only Box Office Class 9 movie genre groups the most popular genre groups have the keywords: Action, Adventure and Fantasy.

Insight: Moco should invest in movie with genre groups containing Action, Adventure, Family, and Fantasy. From the above analysis we can conclude that investing in movies which fall under more than one genre are more profitable than movies which fall under one genre only.

b. Effect of Star value Cast, Director, Producer and Special Effects on success of movie

One of the main factors that influences a movie's success is the people working on it. Consumers will be more willing to watch a movie if more renowned celebrities are working on the project. Another thing that makes a movie successful is good visual effects. Special effects are how movies create a fictional world.
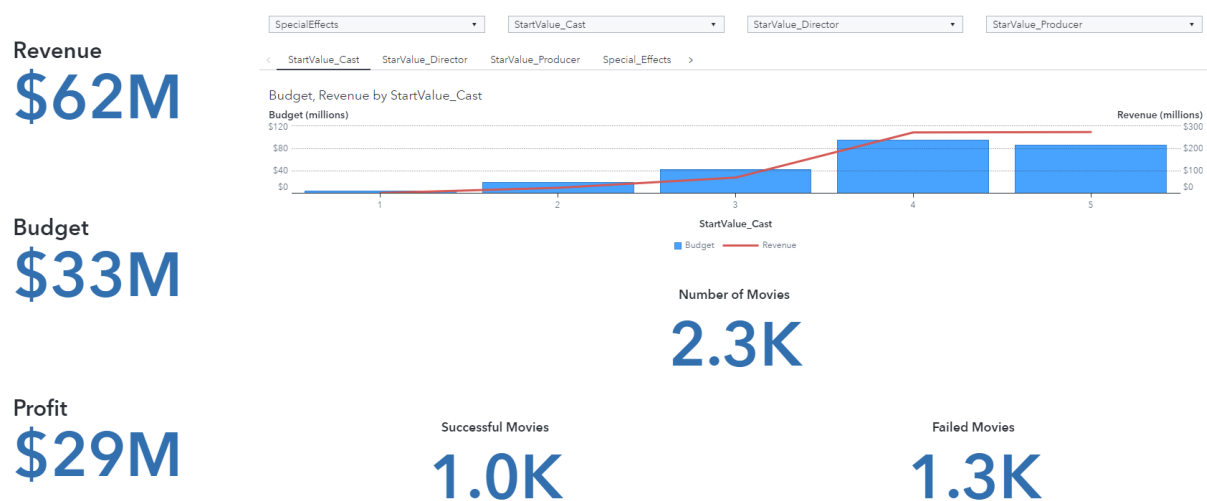
Star value Cast:
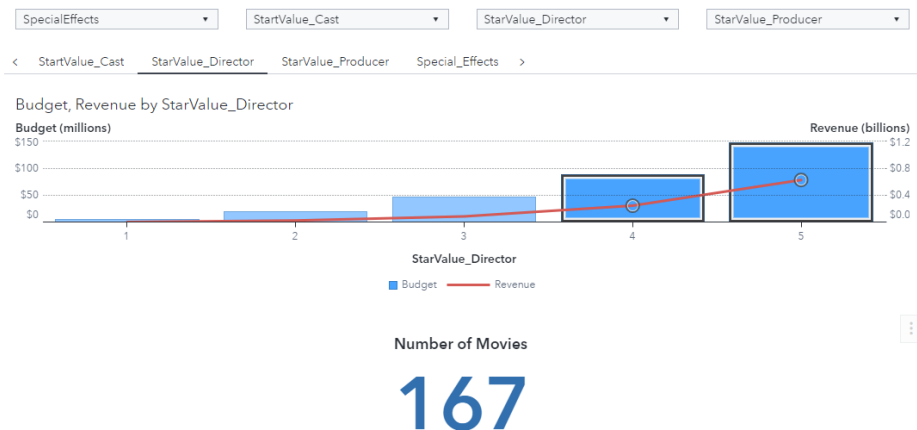

Fig. 6: Effect of Star value cast on profits

Fig. 6 visualizes budget and revenue for different star value rating of the cast. It can be observed that the star cast rating has a significant effect on the budget and revenue till the cast rating below 4. For star cast rating 4 and 5 the budget and the revenue for both is similar with slightly higher budget for star cast rating 4 and slightly higher revenue for star cast rating 5. After using the filter for the rating 4 and 5 we notice that out of 218 movies 214 movies were successful with no failed movies in star cast rating 5.

Star Value Director:
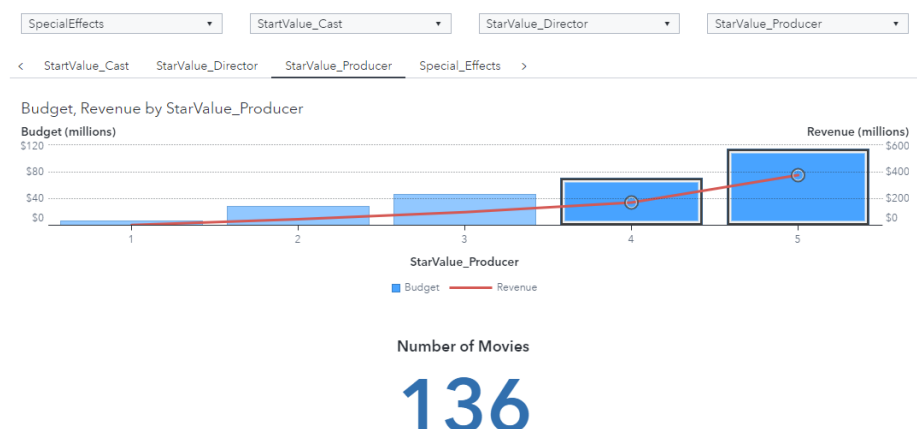

Fig. 7: Effect of Star value director on profits

Fig 7 shows how star value director affects the profits and success of movie. We filtered for director rating of 4 and 5. We can see the success rate is very high with only 7 movies failing. Another thing to note is average profit of movies with director rating of 5 is more than 3 times the movies with director rating of 4. Overall, the budget and revenue exponentially increase with improvement in director rating.

Star value Producer:

Fig. 8: Effect of Star value Producer on profits

Star value of producer follows a similar trend as the director. After filtering for producer rating of 4 and 5 we can see that the profit is 135% of the budget. Another thing to notice is average revenue for producer rating of 5 is double of revenue for producer rating of 4($200 million).
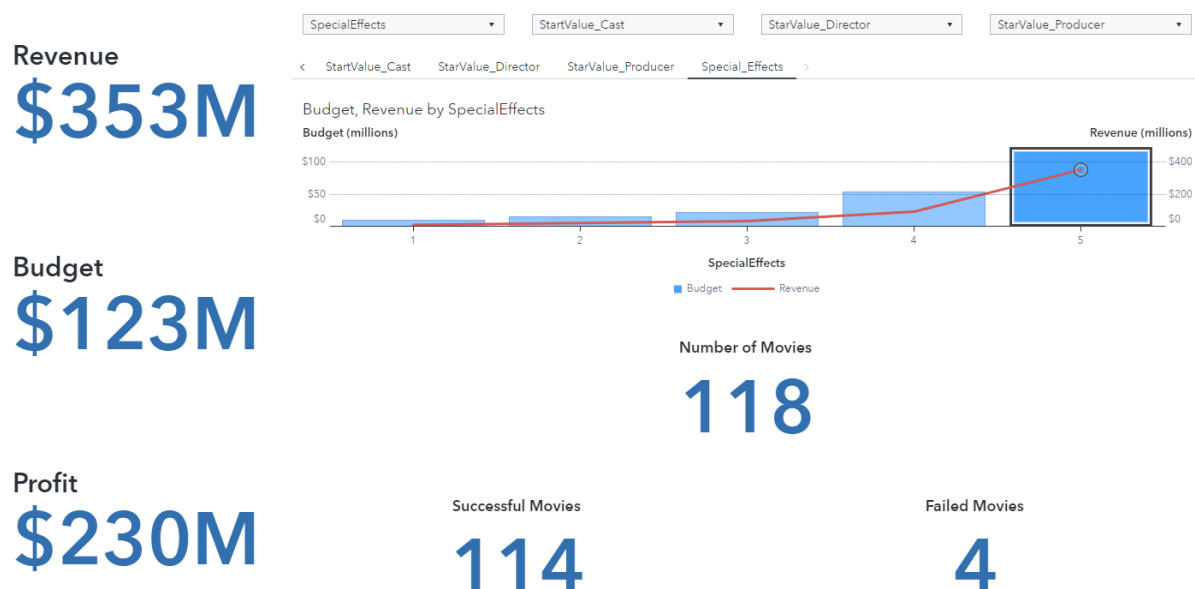
Special Effects:

Fig. 9: Effect of Special Effects on profits

We can see that only special effects rating of 5 makes big profit. Rating of 4 and under makes very little profit. Out of 118 movies with rating of 5 only 4 movies failed. This shows that unless the movie's special effects are highly rated consumers do not want to spend on it. Since Action, Adventure and fantasy are the most profitable genre groups and hence require the most advanced technology for the special effects, implementing special effects rating of 5 in the creation of movies increases revenue 3.5 times over using special effects rating of 4.

Combination Analysis

Comparing above variable separately does not give us enough information to analyse it correctly. By combining all the variables into a single graph will give us the optimum ratings for each variable for the organisation to invest in the right movie.
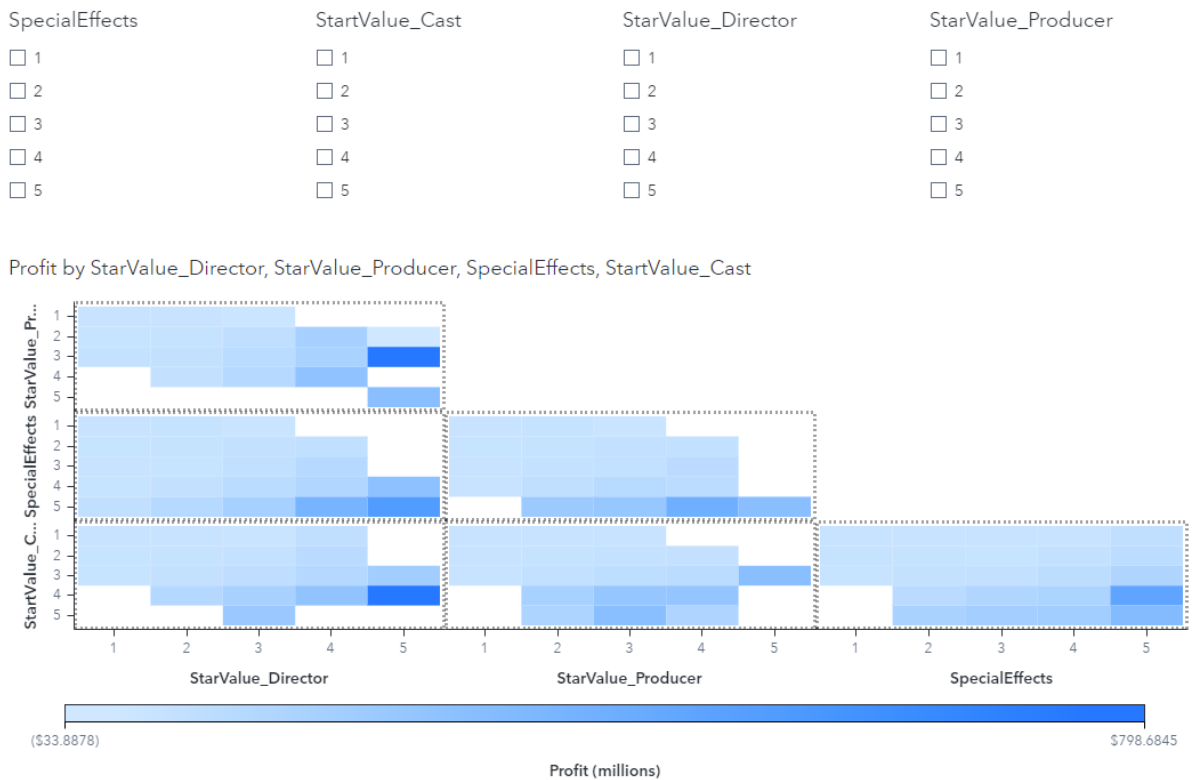
Fig. 10: Heatmap of star value cast, director, producer, and special effects with profit

Fig. 10 shows the corelation between the star value cast, director, producer, and special effect based on the profit it generates for the organisation. It can be interpreted from the heat map that director rating of 5 makes the highest profit combined with cast rating of 4 or a producer rating of 3 or special effects rating of 5. With technology advancing everyday movies are able to push the limits of reality using special effects. Top grossing genre groups makes it apparent that consumers are willing to spend to watch a movie with only the best special effects.

Insight: Moco organisation should invest in movies with director with rating 5, cast with rating 4 and above, producer with rating 3 and special effect with rating 5 as this will make the most profit for the organisation.

c. Effect of MPAA rating on Success of a movie

Fig. 11(a) shows that the most movies released are rated 'R' (985 movies) followed by 'PG13' (892 movies) but movies rated 'G' have the highest profit ($62 million) among all the ratings. When a movie is released, the creators want their movie to reach the maximum number of consumers in order to earn higher profits. The reason for 'G', 'PG' and 'PG13' are with the highest profits is because they cater to a larger audience than other MPAA ratings.
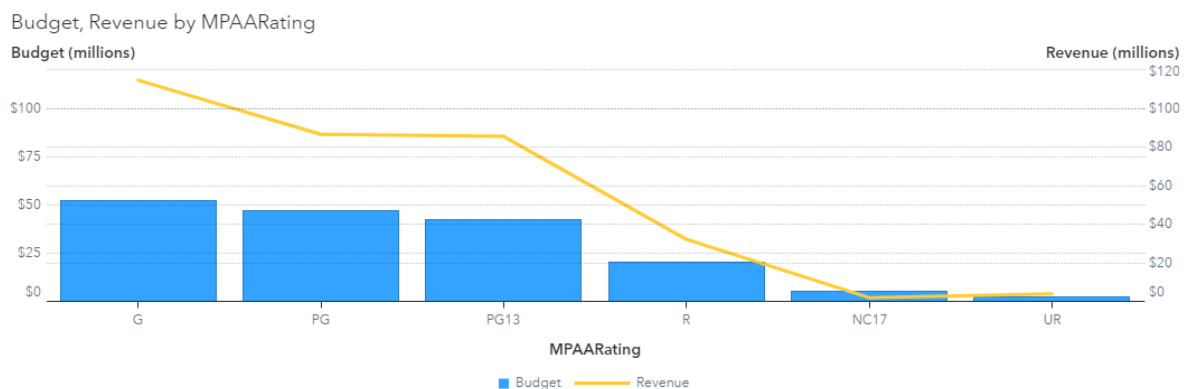
Fig. 11: a. Word Cloud of MPAA Rating b. Budget and Revenue by MPAA Rating

Movies with MPAA rating 'R', 'NC17', 'UR' have less than half the budget than other categories with least budget for 'UR' rating. It should also be noted that movies with rating 'NC17' have never made profit in the 10 years.

Insight: Moco Organisation should only invest in movies with MPAA rating of 'G', 'PG', 'PG13' as they create the maximum profit.

d. Effect of Screen Count on Success of movie

A movie will only be successful if it reaches to as many audiences as possible. It needs to be screened in higher number of screens in order to reach the consumers. Fig. 12 shows that successful movies generally screened in a greater number of screens. From the histogram we can see a spike in number of screens at 2400 for successful. The frequency of higher number of screens for successful movies increases from there up to 3300 screens with some movies screening in 3500 screens. There are few movies which successful with less screens than 2000.
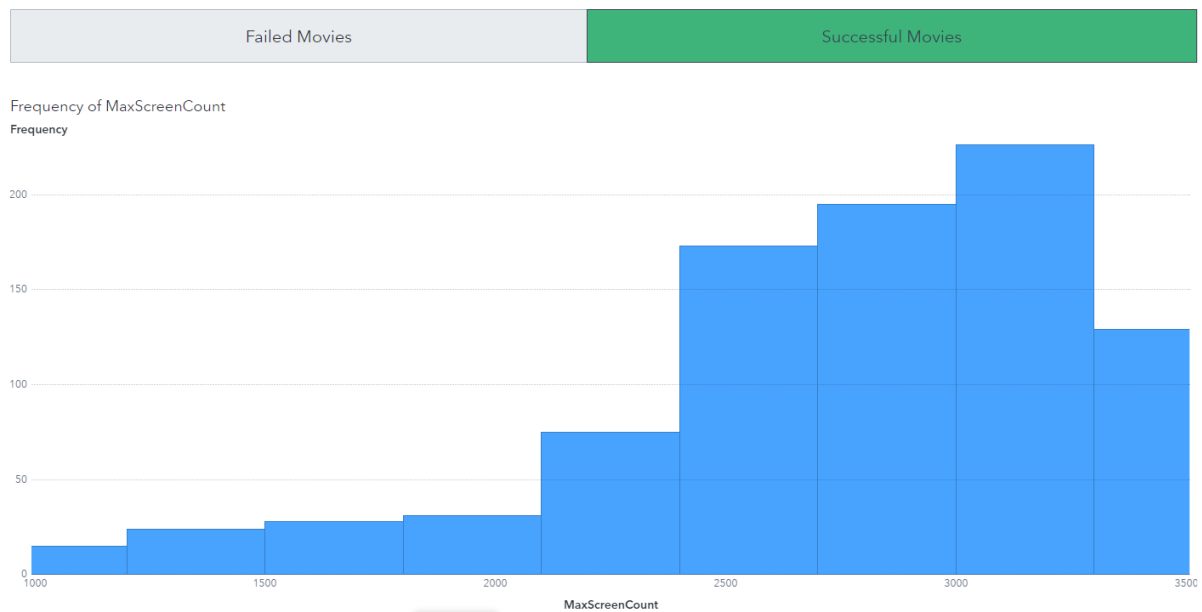
Fig. 12: Frequency of screen count for successful movies

Insight: MoCo Organisation should try to screen their movies in as many screens as possible in order to reach larger audience and make the movie a success.

e. Effect of competition on success of movie

Fig. 13: Effect of competition on profit for successful movies

It can be observed from fig. 13 that movies with medium to high competition make significantly more profit than the movies with low competition. Movie with medium

competition make the highest profit ($61 million) while movies with high competition make $49 million in profit. Movies with low competition make less than one-fourth of the profit compared to movies with high competition. With healthy competition in theatres audiences are more willing to watch the movie to and some competition gives more choices to the consumers.

Insight: MoCo organisation should strategically release their movies when there is more competition in the theatres.

Conclusion and Recommendation

Based on the above analysis we can conclude that investing in movies and making profit off it is a complicated process and takes understanding of the film industry. According to the analysis for a movie to be success it needs to possess the following features:

Feature 1: Movie should be in combination of the genres Action, Adventure, Family, and Fantasy with any other popular genre from the above graphs.

Feature 2: Movie should have director with rating 5, cast with rating 4 and above, producer with rating 3 and special effect with rating 5.

Feature 3: Movie should have the MPAA rating 'G', 'PG' or 'PG13'.

Feature 4: Movies should be screened in 2300 screens and above.

Feature 5: Movies should be released when the competition in the theatres is medium to high.

MoCo organisation should adhere to the above features while investing in a movie to optimise their investment strategy and make maximum profit and releasing more successful movies. Using analysis tools, the organisation can increase the probability of producing blockbuster hits.