Microsoft Cinema:

Movie Studio Analysis

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Overview

This report helps to explore what makes a movie successful. We analyze the relationship between movie ratings, movie genres, as well as their total grossing, to identify what are the popular movie genres that people enjoy and to be able to set a target expectation of returns in gross for the first movie produced by Microsoft Cinema.

Business Problem

Microsoft has the cash but not the experience to make a new movie studio.

Here is where my team comes in.

We have come up to help Microsoft better understand the movie industry through the power of data analysis and provide the head of Microsoft's new movie studio actionable insights on make makes a movie great and recommend what type of film to create.

DATA → KNOWLEDGE → ACTION

Questions to Consider:
1. Is making movies profitable?
2. Popular movie genres?
3. Movie budget and target gross?

Data Exploration
& Preparation

We scour and gathered datasets from the most well known movie rating sites. Ultimately, those datasets that have been selected for the purpose of our analysis are based on the business problem questions and our selection criteria:

1. Completeness.
2. Relevance to the business problem.
3. Target variables: Average ratings, genres, movie budget, movie gross.

The Selected datasets are:
- imdb.title.basics.csv
- imdb.title.ratings.csv
- tn.movie_budgets.csv
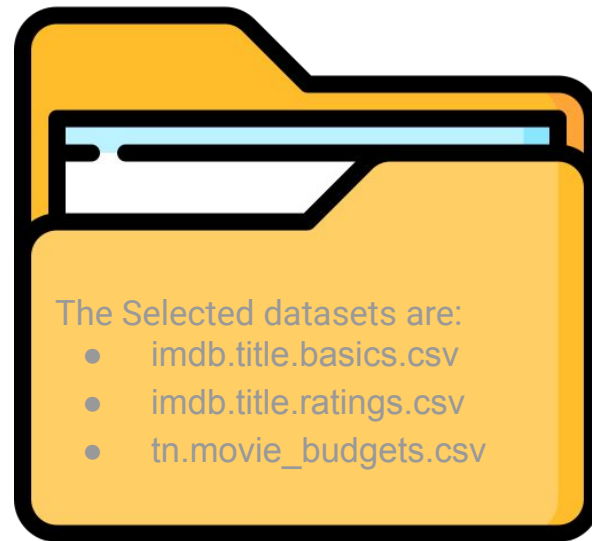
Data Cleaning

The first step before any analysis can be conducted is we must clean and prep the data.

1. Dealing with missing values

Movies with incomplete values or 0 values in budget or grossing are dropped from the dataset as those movies might not be mainstream popular nor would have gross earnings of significance and therefore could be dropped without worrying about significantly altering the analysis

2. Dealing with duplicates

There could be multiple movies with the same name but are different movies altogether produced by different studios.
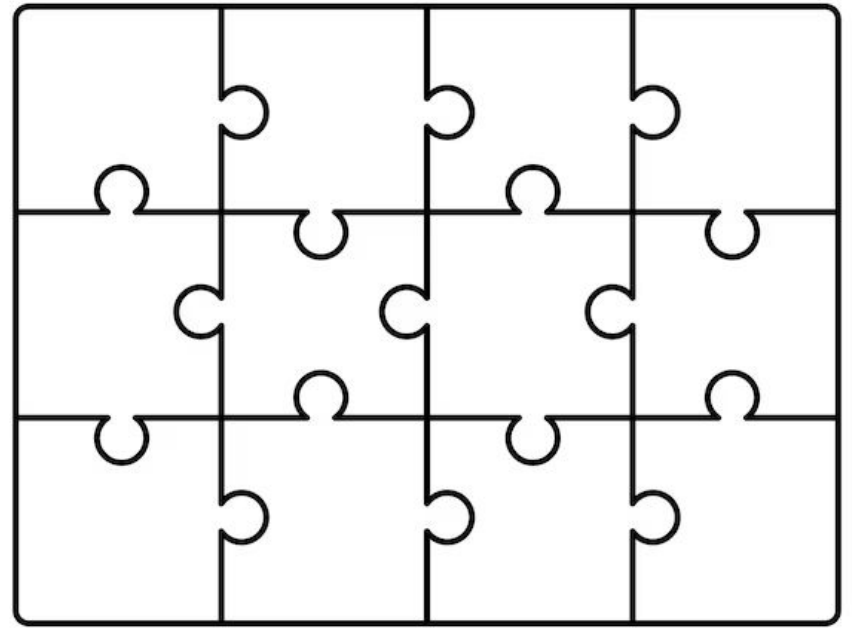
For the different datasets, duplicates can be identified using keys such as movie title, year of release, budget, and the movie gross.
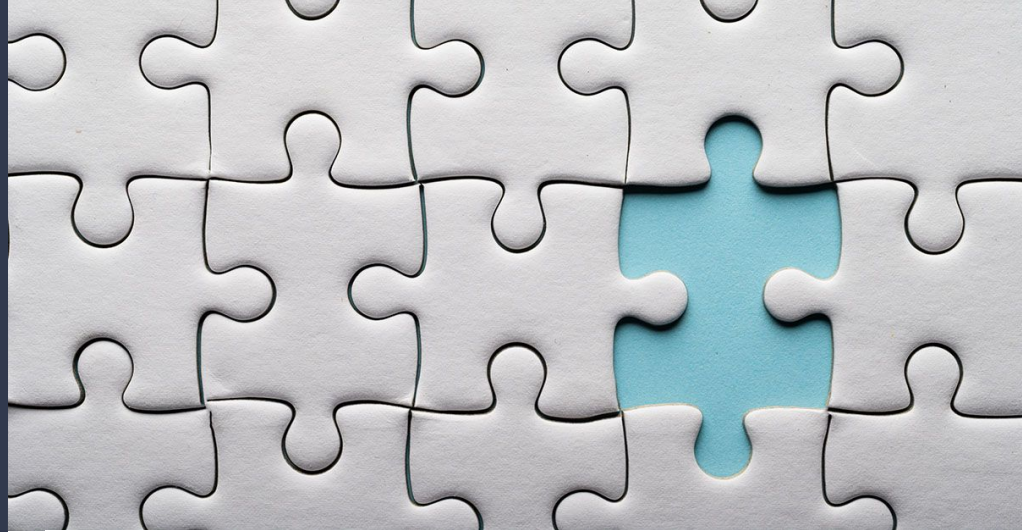
Data Normalization

After the preparation phase, we combined all 3 datasets into 1 Master dataframe.

We can now look into the trends and numbers that makes a great movie.
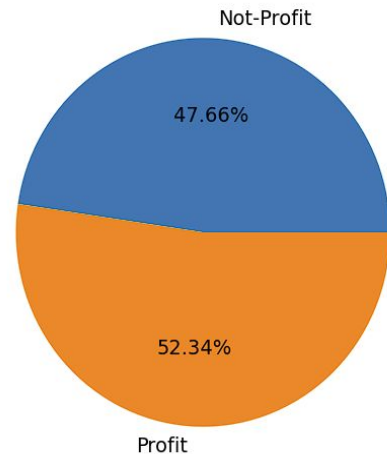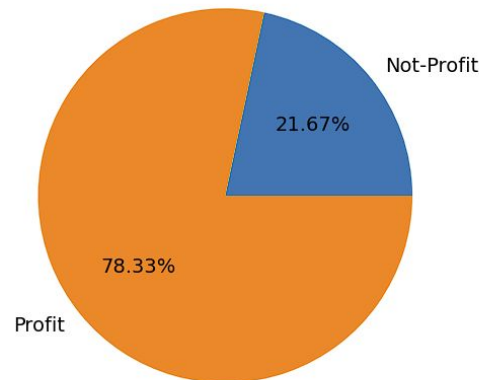
Gross Earnings?

From the charts to the right, we can see that almost half did not make it.

And total earnings from worldwide gross makes up the majority of the profits a movie can earn.

Domestic Gross: Percent of Profit/Non-Profit

Not-Profit

47.66%

52.34%

Profit

Worldwide Gross: Percent of Profit/Non-Profit

Not-Profit

21.67%

78.33%

Profit

Is Making Movies Profitable?

- The short answer is yes, but other variables should be taken into consideration.
- There are huge risks to making movies, more than 47% of the movies analyzed are not profitable in a domestic setting.
- And 21.67% of movies listed flopped even after considering worldwide grossing.

With huge potential profits comes with huge risks, other variables such as marketing costs which were not included in this analysis, might change how profitable the movies we analyzed are.

Additional risk assessment with more variables is recommended for further analysis.
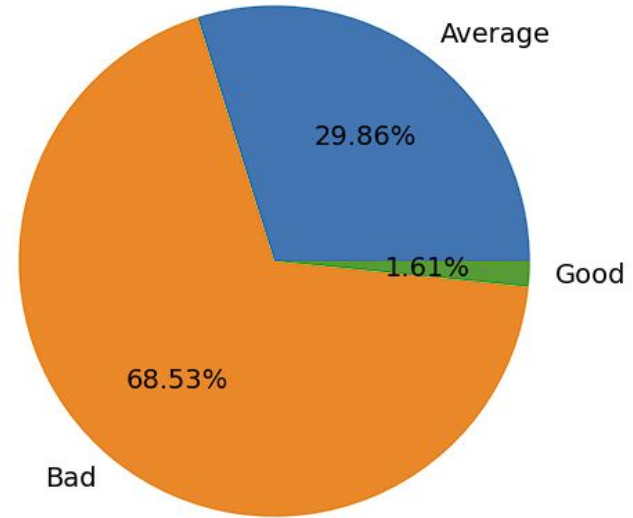
Movie Ratings

Overall making movies can be profitable, but to ensure the continued success of our future movie studio, we should consider how the movies are rated and which genres are most popular.

We find that most movies made were rated as bad, less than 30% of movies made are rated "Average" and only less than 2% are considered good movies.

Average Rating of Movies

How Many Genres Are There?

There are 21 individual genres identified.

From 2010 - 2019, most movies belong in the Drama category followed by Comedy and Action.

Genres belonging to movies made from 2010 - 2019

Genre	Count
Drama	640
Comedy	463
Action	396
Adventure	327
Thriller	227
Crime	205
Romance	173
Horror	140
Biography	128
Sci-Fi	122
Fantasy	113
Mystery	110
Animation	94
Family	84
Music	47
History	36
Sport	32
Documentary	23
War	16
Western	9
Musical	7
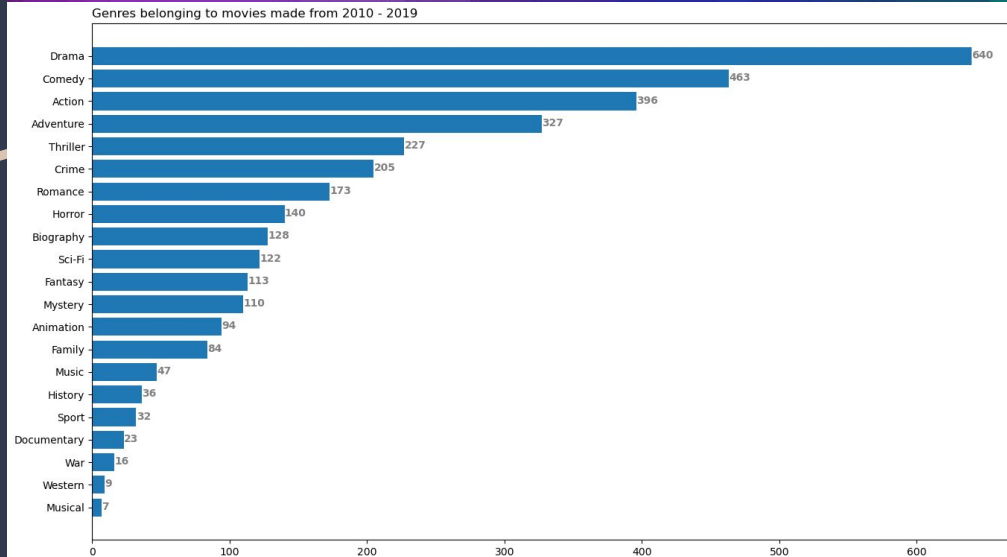
Top 10 Movie Genre & Their Combinations

8 out of the top 10 movies contain genres Action and Adventure, both making up 26.7% respectively of the 9 identified individual genres from Top 10 grossing movies.

Genre combinations classified as Adventure, Action, and Sci-Fi make up 60% of those movies.
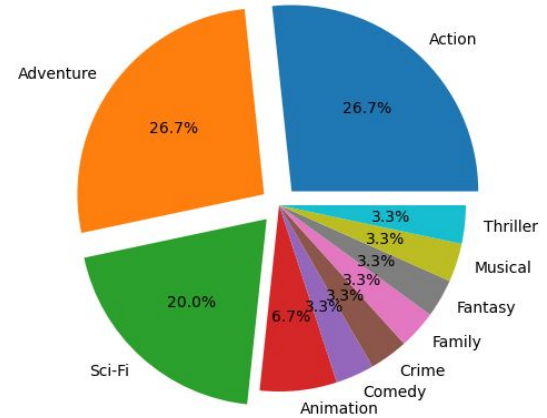
Individual Genres

Action 26.7%
Adventure 26.7%
Thriller 3.3%
Musical 3.3%
Fantasy 3.3%
Family 3.3%
Crime 3.3%
Comedy 3.3%
Animation 6.7%
Sci-Fi 20.0%

Movie Genre Combinations

Action,Adventure,Sci-Fi 60.00%
Action,Adventure,Animation 10.00%
Family,Fantasy,Musical 10.00%
Adventure,Animation,Comedy 10.00%
Action,Crime,Thriller 10.00%
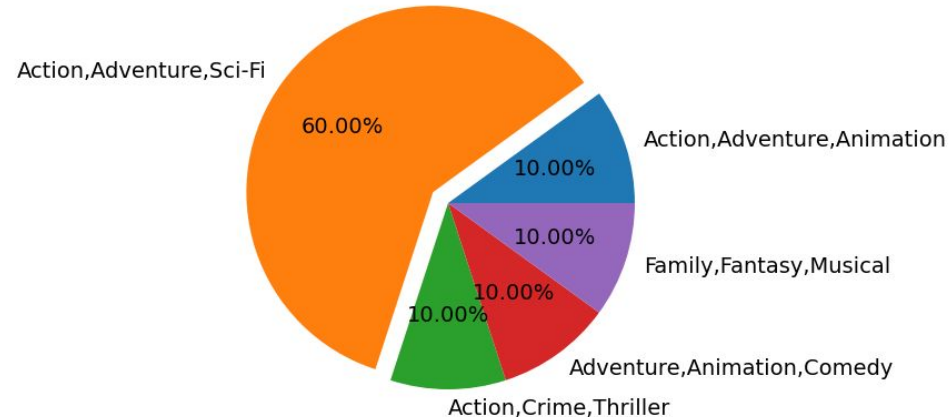
How Much Money Did They made?

The mean worldwide gross for the top 10 movies is close to $1.43 billion.

Here we can see the genre combination of Action, Adventure, Sci-Fi dominates the other combinations.
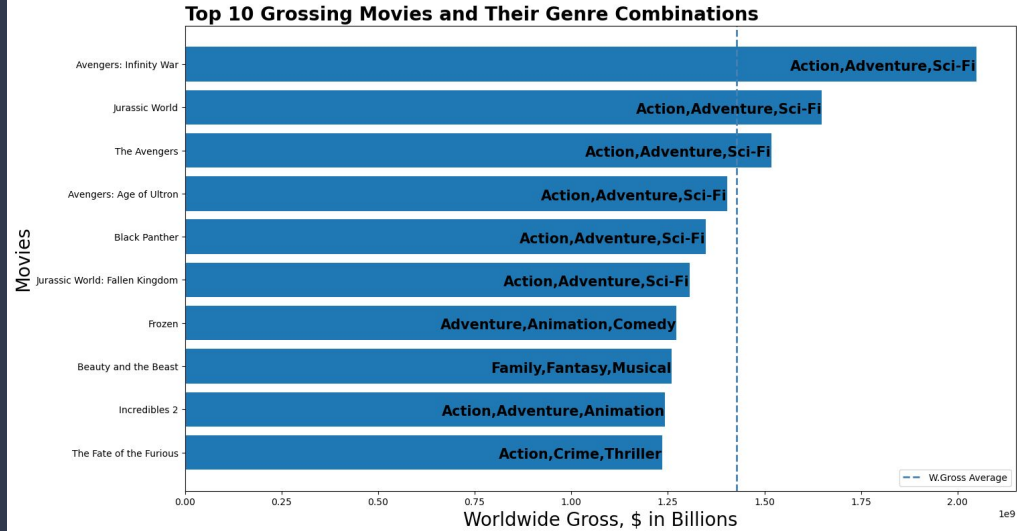

Top 10 Grossing Movies and Their Genre Combinations

Movies	Genre Combination
Avengers: Infinity War	Action,Adventure,Sci-Fi
Jurassic World	Action,Adventure,Sci-Fi
The Avengers	Action,Adventure,Sci-Fi
Avengers: Age of Ultron	Action,Adventure,Sci-Fi
Black Panther	Action,Adventure,Sci-Fi
Jurassic World: Fallen Kingdom	Action,Adventure,Sci-Fi
Frozen	Adventure,Animation,Comedy
Beauty and the Beast	Family,Fantasy,Musical
Incredibles 2	Action,Adventure,Animation
The Fate of the Furious	Action,Crime,Thriller

Worldwide Gross, $ in Billions

- - - W.Gross Average

Genre Recommendations?

From the analysis findings we gather, I recommend the following as a guide to what kind of movie the studio should produce:

- Both genres, Action and Adventure have demonstrated consistent success over the last decade in amassing the most amount of gross earnings.
- Sci-fi as a third movie genre is a safe option as 60% of the highest-grossing movies have those 3 combinations.

If the studio wishes to pursue other movie genre combinations;

- Other genres such as animation, comedy, and fantasy can be substituted with Sci-Fi.

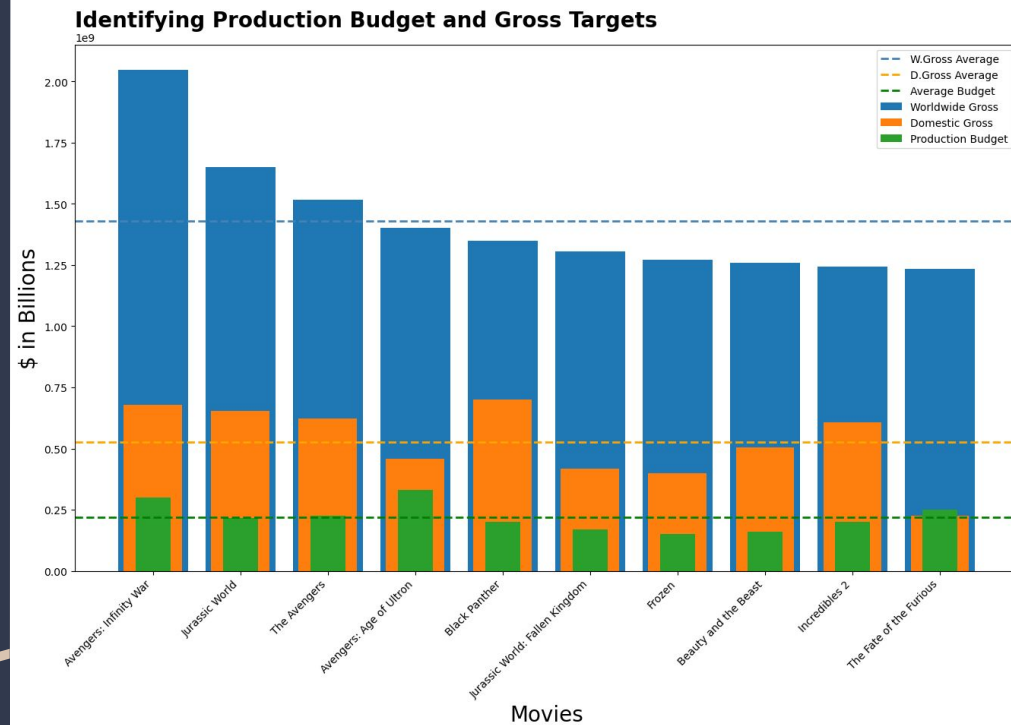Until we can identify which genre the studio can specialize in;

- It is highly recommended that the studio have both Action and Adventure or at least one of them in the movie genre combination as a first release.

What Is Our Target?

To be successful and competitive in this colossal movie industry, we have to create a mark for Microsoft Cinema by having a successful first movie release as the new and upcoming studio.

For the final evaluation, we should set expected targets for the production budget and target gross for what we want to achieve for a successful movie release.

Identifying Production Budget and Gross Targets

Legend:
- W.Gross Average
- D.Gross Average
- Average Budget
- Worldwide Gross
- Domestic Gross
- Production Budget

Y-axis: $ in Billions

X-axis (Movies): Avengers: Infinity War, Jurassic World, The Avengers, Avengers: Age of Ultron, Black Panther, Jurassic World: Fallen Kingdom, Frozen, Beauty and the Beast, Incredibles 2, The Fate of the Furious

Expected Targets:

- Production Budget: $22,000,000
- Target Domestic Gross: $527,000,000
- Target Worldwide Gross: $1,430,000,000

Future & Further Analysis

This report does not include several variables for the gathering of the gross earnings of the movies listed in the datasets which may have a high impact on the total earnings of a movie released. Variables for further analysis should include:

- Marketing cost
- Sponsorships
- Royalties

We should also gather more information on potential actors and movie crew members such as directors and take into consideration how they may affect movie popularity and ratings for future analysis.

Thank you!

Please visit my github page for the scripts and codes used for this analysis:

https://github.com/FooZheShen/Phase-1-Project/tree/main

For a written report feel free to read through the README in Github or click on the link below:

https://github.com/FooZheShen/Phase-1-Project/blob/main/README.md