MOVIE STUDIO SUGGESTIONS

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CHAPTER 1 BUSINESS UNDERSTANDING

1.1. OVERVIEW

Microsoft intend to enter the movie studio scene and they have undertaken to research the industry to ensure that the content they create is marketable. They have charged the Data Scientist to give them insights on the market trend so that they can make a decision on what types of films to create. This will be achieved by analyzing what types of films are doing best at the box office and translating the findings into actionable insights that can then be rendered to the head of Microsoft's new movie studio.

1.2. PROBLEM STATEMENT

The main goal of the project is to find the types of films doing best at the box office. This shall be achieved by analyzing the following:

i) What genres brought in the most income?

ii) What were the budgets and profits of the movies?

iii) What directors brought in the most income and best ratings?

iv) Was there a relationship between runtime and ratings?

v) What are the top studios?

CHAPTER 2 DATA UNDERSTANDING

2.1. DATA UNDERSTANDING

A. BOX OFFICE MOJO

The Box Office Mojo data had the following properties:

i) The shape was (3387, 5)

ii) The column information was:

```
bom_movie_data.info()
✓ 0.1s
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 3387 entries, 0 to 3386
Data columns (total 5 columns):
 #   Column          Non-Null Count  Dtype
---  ------          --------------  -----
 0   title           3387 non-null   object
 1   studio          3382 non-null   object
 2   domestic_gross  3359 non-null   float64
 3   foreign_gross   2037 non-null   object
 4   year            3387 non-null   int64
dtypes: float64(1), int64(1), object(3)
memory usage: 132.4+ KB
```

iii) The data description was:

```
bom_movie_data.describe()
```
✓ 0.2s

	domestic_gross	year
count	3.359000e+03	3387.000000
mean	2.874585e+07	2013.958075
std	6.698250e+07	2.478141
min	1.000000e+02	2010.000000
25%	1.200000e+05	2012.000000
50%	1.400000e+06	2014.000000
75%	2.790000e+07	2016.000000
max	9.367000e+08	2018.000000

iv) The first five values for this data were:

```
bom_movie_data.head()
```
✓ 0.1s

	title	studio	domestic_gross	foreign_gross	year
0	Toy Story 3	BV	415000000.0	652000000	2010
1	Alice in Wonderland (2010)	BV	334200000.0	691300000	2010
2	Harry Potter and the Deathly Hallows Part 1	WB	296000000.0	664300000	2010
3	Inception	WB	292600000.0	535700000	2010
4	Shrek Forever After	P/DW	238700000.0	513900000	2010

v) The last five values for this data were:

```
bom_movie_data.tail()
```
✓ 0.7s

	title	studio	domestic_gross	foreign_gross	year
3382	The Quake	Magn.	6200.0	NaN	2018
3383	Edward II (2018 re-release)	FM	4800.0	NaN	2018
3384	El Pacto	Sony	2500.0	NaN	2018
3385	The Swan	Synergetic	2400.0	NaN	2018
3386	An Actor Prepares	Grav.	1700.0	NaN	2018

B. THE NUMBERS

The Numbers data had the following properties:

i) The shape was (5782,6)

ii) The column information was:

```
tn_data.info()
```
✓ 0.7s

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 5782 entries, 0 to 5781
Data columns (total 6 columns):
 #   Column             Non-Null Count  Dtype 
---  ------             --------------  ----- 
 0   id                 5782 non-null   int64 
 1   release_date       5782 non-null   object
 2   movie              5782 non-null   object
 3   production_budget  5782 non-null   object
 4   domestic_gross     5782 non-null   object
 5   worldwide_gross    5782 non-null   object
dtypes: int64(1), object(5)
memory usage: 271.2+ KB
```

iii) The data description was:

```
tn_data.describe()
✓ 0.1s
```

	id
count	5782.000000
mean	50.372363
std	28.821076
min	1.000000
25%	25.000000
50%	50.000000
75%	75.000000
max	100.000000

iv) The first five values of this data were:

```
tn_data.head()
✓ 0.1s
```

	id	release_date	movie	production_budget	domestic_gross	worldwide_gross
0	1	Dec 18, 2009	Avatar	$425,000,000	$760,507,625	$2,776,345,279
1	2	May 20, 2011	Pirates of the Caribbean: On Stranger Tides	$410,600,000	$241,063,875	$1,045,663,875
2	3	Jun 7, 2019	Dark Phoenix	$350,000,000	$42,762,350	$149,762,350
3	4	May 1, 2015	Avengers: Age of Ultron	$330,600,000	$459,005,868	$1,403,013,963
4	5	Dec 15, 2017	Star Wars Ep. VIII: The Last Jedi	$317,000,000	$620,181,382	$1,316,721,747

v) The last five values of this data were:

```
tn_data.tail()
✓ 0.1s
```

	id	release_date	movie	production_budget	domestic_gross	worldwide_gross
5777	78	Dec 31, 2018	Red 11	$7,000	$0	$0
5778	79	Apr 2, 1999	Following	$6,000	$48,482	$240,495
5779	80	Jul 13, 2005	Return to the Land of Wonders	$5,000	$1,338	$1,338
5780	81	Sep 29, 2015	A Plague So Pleasant	$1,400	$0	$0
5781	82	Aug 5, 2005	My Date With Drew	$1,100	$181,041	$181,041

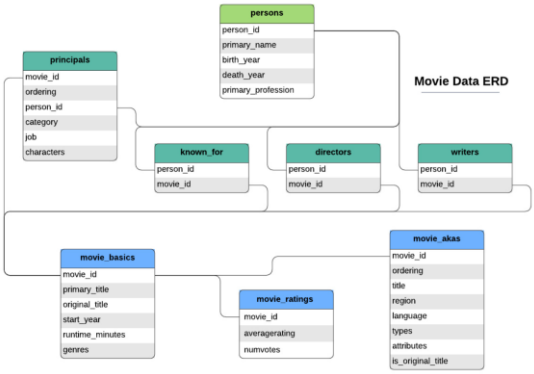
C. IMDB

The IMDB data was in SQL format and the tables associated with it were:

i) principals
ii) persons
iii) known_for
iv) directors
v) writers
vi) movie_basics
vii) movie_ratings

viii) movie_akas

The entity relationship diagram (ERD) was as follows:



2.2. DATA PREPARATION

Data cleaning on The Numbers dataset was done. The dollar sign and comma sign were removed and their types changed to float so that calculations can be done on the production_budget, domestic_gross, worldwide_gross columns. There were no missing values found in this dataset so no action against them was taken and the analysis was done on this set. However, there were some duplicates and they were dropped.

```
tn_data.info()
✓ 0.9s
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 5782 entries, 0 to 5781
Data columns (total 6 columns):
 #   Column             Non-Null Count  Dtype
---  ------             --------------  -----
 0   id                 5782 non-null   int64
 1   release_date       5782 non-null   object
 2   movie              5782 non-null   object
 3   production_budget  5782 non-null   float64
 4   domestic_gross     5782 non-null   float64
 5   worldwide_gross    5782 non-null   float64
dtypes: float64(3), int64(1), object(2)
```

The individual tables on the IMDB dataset were checked for missing values and duplicates and they were handled differently. For columns with a lot of missing values, the columns were dropped. If the missing values were not too many, the missing records were replaced with the mean of the column for integers and floats or the mode for string data.

Bom movies' missing data were filled with the mean of the respective column. However, some missing records were dropped from the dataset.

CHAPTER 3 DATA ANALYSIS

After analysis, it was found that:

i) The genre with the highest rating was Family and Adventure

ii) The movies released for sale to the worldwide audience did better than those released domestically
iii) The top 10 directors were found to be:
    a. Reinhard Kungel
    b. Erik Matti
    c. Mark Adams
    d. Ana Reiper
    e. Aydin Bulut
    f. Valeria Testagrossa
    g. Fancesco Longo
    h. Davide Pesca
    i. Ignas Joynas
iv) The movie length should range from 40 to 120 minutes.
v) The top studios that they would be in competition with are:
    a. Studio BV
    b. Fox
    c. Warner Bros (WB)
    d. Universal Pictures (Uni)
    e. Sony

CHAPTER 4 CONCLUSION AND RECOMMENDATION

The results above informed the recommendations to Microsoft for as they open the movie studio. These would ensure they produce films that will be consumed by many and have directors that would ensure they have high ratings. Also they have a budget that they can use while making the films so that they can measure their expected profits depending on the genre they pick.