# Movie Sales and Performance Analysis (Power BI)

## Project Overview

This project provides a comprehensive **Business Intelligence** analysis of the movie industry, focusing on box office revenue, critical reception (IMDb ratings, votes), genre distribution, and time-based trends. The goal is to deliver actionable insights into which factors—such as genre, director, or runtime—contribute most significantly to a film's financial and critical success. The analysis is presented through an interactive **Power BI Dashboard**.

## Problem Statement

The film industry operates on high risk, with massive budgets spent on productions that may or may not succeed commercially. The core challenge this project addresses is: **How can studio executives and production companies leverage historical data to forecast a movie's potential success, identify high-ROI content characteristics, and optimize resource allocation by understanding the correlation between financial performance (revenue) and audience/critical appeal (ratings and votes)?**

## Analysis and Methodology

The Power BI dashboard was built using **DAX measures** and advanced visualization techniques to perform a multi-dimensional analysis across the movie dataset (covering approximately 1,000 released titles):

### 1. Time-Series and Market Trend Analysis

- **Release Volume Trend:** Analyzed the total number of movies released per year to identify market saturation and growth periods. **(Key Finding: Top five years for releases are concentrated between 2012 and 2016).**
- **Revenue Trend:** Tracked the trend in total box office revenue over the years to assess market health. **(Key Finding: Total box office revenue generally shows an increasing trend over the years).**
- **Critical Reception Trend:** Monitored the average IMDb rating year-over-year. **(Key Finding: Average IMDb ratings showed fluctuations, ending at a lower point by 2015/2016).**
- **Votes and Runtime:** Analyzed the average number of votes and average movie runtime by year.

### 2. Genre and Performance Analysis

- **Genre Distribution:** Calculated the total count and revenue share of movies across different genres. **(Key Finding: 'Drama' is the most common genre by count, but 'Adventure' and 'Action' genres generate the highest total revenue.)**

- **Genre Quality Metrics:** Compared average IMDb ratings and average Metascores across genres. **(Key Finding: 'War', 'Animation', and 'Biography' genres generally have the highest average IMDb ratings, indicating better critical reception.)**

**3. Top Performer and Director Analysis**

- **Revenue Drivers:** Identified the top-grossing movies and directors by analyzing total revenue and total votes. **(Key Finding: J.J. Abrams and David Yates are among the top directors by total revenue.)**
- **Top 10 Contribution:** Calculated the proportion of total revenue generated by the top 10 movies compared to the rest of the catalog, highlighting concentration risk.

**4. Correlation and Advanced Metrics**

- **Rating vs. Revenue:** Used scatter plots to visualize the relationship between average IMDb rating ( `avgimdb` ) and total revenue across different genres. **(Key Finding: High-revenue genres like Action/Adventure appear to command high revenue even with slightly lower average ratings compared to critically acclaimed genres like War/Biography.)**
- **Runtime Impact:** Examined the trend of average revenue and average rating as a function of movie runtime in minutes.

## Key Results and Findings

- **Highest Revenue Genres:** **Adventure** ($\$39K$) and **Action** ($\$36K$) are the genres that contribute the most to total box office revenue.
- **Most Common Genre:** **Drama** is the most frequently produced genre with **513 titles**.
- **Top Directors:** Directors like **J.J. Abrams** and **David Yates** lead the rankings based on total revenue generated by their movies.
- **Revenue Concentration:** The top-performing movies account for a significant portion of the total revenue, indicating that revenue success is highly concentrated.
- **Critical vs. Commercial Success:** Genres with high critical reception (e.g., War, Animation) do not necessarily correlate with the highest box office revenue (Action, Adventure).

## Tools and Technologies Used

- **Data Analysis & Modeling:** Power BI, DAX (Data Analysis Expressions)
- **Output:** Interactive Power BI Dashboard
- **Platform:** Innomatics Research Labs