Data-Driven Analysis of Netflix Movies and TV Shows Using Power BI

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Abstract- This research presents a comprehensive analysis of Netflix's movie and TV show catalog using a Power BI dashboard developed from a dataset of 8,803 titles. The objective of this study is to examine content distribution, year-wise growth, genre diversity, maturity ratings, and country-wise contribution through interactive analytics. Various Power BI components—including donut charts, area charts, KPI cards, bar charts, and decomposition trees—were used to extract meaningful insights. The findings reveal a major rise in content production after 2015, with TV shows dominating the platform at 69.62%. Rating analysis shows TV-MA and TV-14 as the most frequent categories, while genre analysis highlights strong representation of dramas, documentaries, and international content. Country-level exploration identifies the United States and India as major contributors. This study demonstrates the effectiveness of Power BI as a business intelligence tool for analyzing large-scale streaming datasets and generating actionable insights.

Keywords- Netflix analysis, Power BI, Data visualization, Dashboard analytics, Streaming platforms

I. INTRODUCTION

The rapid expansion of digital streaming platforms has reshaped global content consumption, with Netflix emerging as one of the most dominant providers of on-demand entertainment. The platform hosts a vast library of movies, documentaries, and TV shows spanning multiple genres, regions, and rating categories, making manual analysis of its content patterns increasingly complex. Understanding these patterns is essential for identifying production trends, regional contributions, and genre preferences that influence viewer engagement and strategic content planning [1]. In an environment of growing competition among streaming services, data-driven insights play a crucial role in helping platforms tailor their offerings and optimize global content strategies.

Traditional approaches to media analysis often rely on static reports, limited metadata review, or isolated case studies, which do not adequately capture dynamic shifts in genre popularity, year-wise growth, rating distributions, or country-specific production trends [2]. Such methods lack interactive visualization capabilities and make it difficult to identify multi-dimensional trends across large datasets.

This research presents a comprehensive analysis of Netflix content through the development of an interactive Power BI dashboard designed to answer seven core research questions.

By transforming raw Netflix metadata into actionable visual insights, this study demonstrates the practical application of business intelligence tools in exploring global content trends and supporting informed decision-making in digital media analytics.

II. LITERATURE REVIEW

Streaming media consumption has been widely examined across disciplines such as digital media studies, data analytics, and communication systems. Early work by Lotz [3] established foundational models describing how on-demand streaming transformed traditional broadcast dynamics, particularly through shifts in audience autonomy and content discovery. Subsequent studies expanded these frameworks to include genre diversification, platform algorithms, and internationalization as core components shaping digital content ecosystems. With Netflix becoming a global entertainment leader, research has increasingly focused on understanding the platform's catalog structure, production trends.

The application of business intelligence and data visualization tools to streaming analytics represents a significant advancement in media research. Davenport [4] highlighted how BI platforms enable organizations to move beyond descriptive statistics by providing real-time, interactive insight generation. Tools such as Power BI allow deeper analysis of content characteristics, viewer preferences, and distribution patterns, helping researchers detect multi-dimensional connections that traditional reporting methods often overlook. As the volume of digital content grows, visualization-driven analytics has become essential for interpreting large.

Genre-based analysis has been a central theme in streaming literature. Smith and Telang [5] suggest that genre diversity plays a critical role in subscriber acquisition and retention, with platforms relying on extensive genre libraries to appeal to global audiences. Studies also indicate that users increasingly consume international content, leading to new research on cross-cultural genre evolution and the role of localized storytelling in digital markets. Rating systems have similarly been explored as indicators of audience segmentation, with research showing that maturity ratings influence both viewing patterns and recommendation system

international strategy has reshaped regional media industries by integrating local creators into global distribution networks. Further literature investigates the rising importance of non-U.S. productions, especially from India, Korea, and Europe, emphasizing how multilingual and culturally specific genres contribute to the platform's global growth [8].

In recent years, visual analytics in media research has gained prominence. Few [9] established foundational principles for designing clear and effective dashboards, emphasizing the importance of visual clarity and user-centered design for non-technical stakeholders. Power BI's integration of drill-down features, decomposition trees, and multi-layered filtering enables researchers to examine complex media datasets with unprecedented granularity. Such tools allow simultaneous analysis of genre, rating, geography, and temporal variables, offering richer insight than traditional spreadsheet-based approaches.

Despite these advancements, existing literature often focuses on isolated elements such as genre trends, rating patterns, or regional contributions. There remains a notable gap in research offering integrated, dashboard-driven frameworks capable of analyzing multiple dimensions of streaming catalog data in real time. This study addresses that gap by developing a comprehensive Power BI dashboard that examines Netflix's content across genres, ratings, countries, and release periods, providing a holistic and interactive analytical model for media research.

III. DATASET DESCRIPTION

The analysis utilizes a comprehensive Netflix Titles dataset containing 8,803 records and 12 primary attributes that collectively describe the platform's global catalog of movies and TV shows. These attributes provide essential metadata related to title identification, release information, country of origin, maturity classifications, cast involvement, and genre categorization.

The dataset represents content originating from different regions, languages, and production contexts, which enables a broad examination of Netflix's international library. The wide temporal coverage of titles released between 1925 and 2021 allows for meaningful trend analysis across multiple decades of content creation.

The Power BI dashboard built for this research incorporates six key performance indicators that summarize the scope of the dataset and provide a high-level understanding before deeper analysis. These indicators include Total Titles (8803), representing the complete volume of content in the dataset; Total Ratings (18), reflecting the number of distinct maturity classifications; Total Genres (515), representing the diversity of genre categories; Total Directors (4526), indicating the variety of creative contributors; and the Start Year (1925) and End Year (2021), which define the historical range of the dataset. Together, these indicators establish the foundation for exploring year-wise, genre-wise, rating-wise, and country-wise trends.

Below is a detailed description of each attribute within the dataset, formatted to align with the style and structure used in the sample research paper's data description section.

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Attribute	Description
show_id	Unique identifier for each title
type	Movie or TV Show
title	Title of the content
director	Director of the title
cast	Main actors in the title
country	Country of origin
date_added	Date added to Netflix
release_year	Year of original release
rating	Maturity rating assigned
duration	Duration (minutes or seasons)
listed_in	Genres/categories listed
description	Short summary of the content

IV. RESEARCH QUESTIONS AND OBJECTIVES

Question 1: ***What is the overall distribution of Movies and TV Shows available on Netflix?***

Answer: The analysis reveals that TV Shows dominate the platform, accounting for 6.13K titles (69.62%), while Movies contribute 2.68K (30.38%). This indicates Netflix's strategic shift toward long-format episodic content, particularly after 2015 as the platform invested heavily in original series. The Donut Chart (Fig. 1) visualizes this composition, demonstrating that Netflix's catalog is nearly twice as rich in TV shows compared to movies.

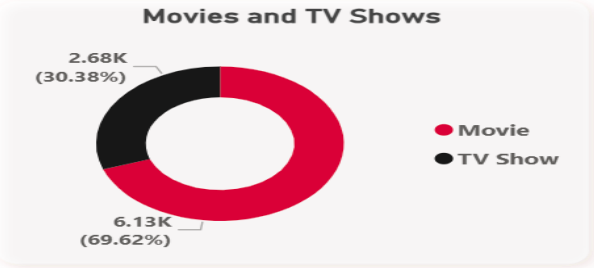

Fig 1. Donut Chart Showing Distribution of Movies and TV Shows

Question 2: ***How has Netflix content production evolved over time, and which years show the highest growth?***

Answer: The Area Chart (Fig. 2) demonstrates a gradual increase in content before the year 2000, followed by a noticeable surge after 2010. The steepest rise appears between 2015 and 2020, reflecting Netflix's global expansion, investments in originals, and strategic content licensing.

The peak growth period aligns with the introduction of numerous international titles and exclusive series. This trend confirms a strong upward trajectory in release volume during the late 2010s.

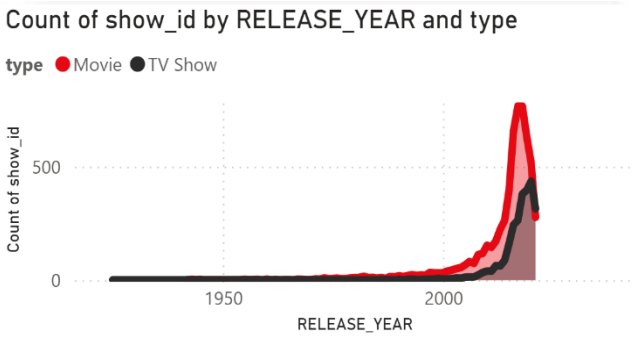

Fig 2. Area Chart of Netflix Titles by Release Year and Type

Question 3: ***Which content maturity ratings dominate the Netflix catalog?***

Answer: Rating analysis shows TV-MA (Mature Audience) as the most prevalent rating with 3.2K titles, followed by TV-14 with 2.2K titles. Ratings such as TV-PG (0.9K) and R (0.8K) also maintain notable presence. Less represented categories include PG-13 (0.5K), TV-Y7 (0.3K), and TV-Y (0.3K). This distribution, illustrated in Fig. 3, indicates Netflix's emphasis on mature content tailored for adult audiences, aligning with its global consumption patterns.

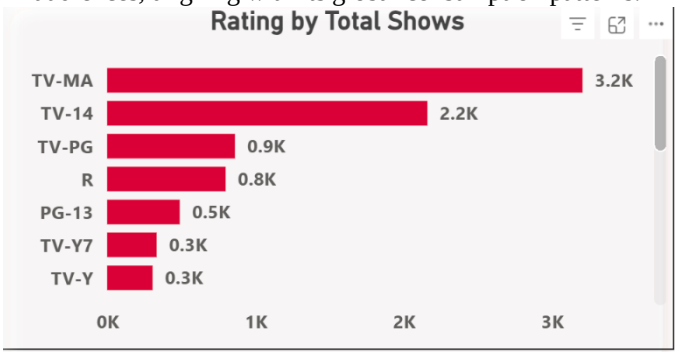

Fig 3. Ratings Distribution Across Netflix Titles

Question 4: ***Which genres are most represented on Netflix ?***

Answer: Genre analysis reveals "Dramas and International TV Shows" as the leading genre with 362 titles, followed closely by Documentaries (359) and Stand-Up Comedy (334). Additional significant categories include Comedies and Dramas (274), Dramas and Independent Movies (252), Kids' TV (220), and Children and Family Movies (215). These findings, shown in Fig. 4, reflect Netflix's global strategy to diversify content across documentary, comedy, drama, and children's entertainment categories.

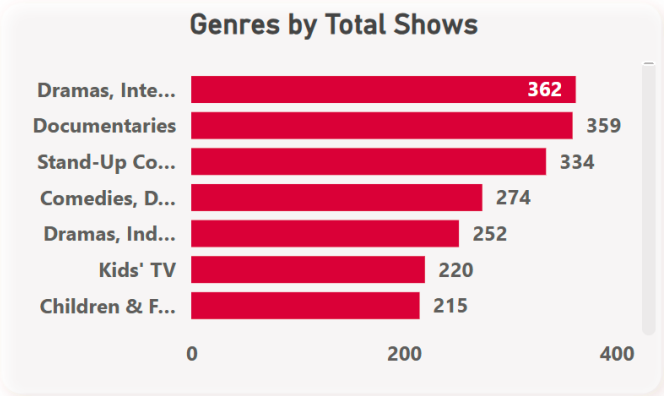

Fig 4. Genre Distribution by Total Titles

Question 5: ***Which countries contribute the most content to Netflix?***

Answer: The country-wise analysis, visualized through the clustered bar chart (Fig. 5), shows that the United States contributes the highest number of titles to Netflix with 2,817 entries. India follows with 972 titles, indicating its growing influence on the platform. Other contributors include the United Kingdom (419), Japan (245), South Korea (199), and Canada (181). An "Unknown" category with 833 entries appears due to missing country metadata in the dataset. This distribution highlights that although Netflix's content library is strongly rooted in U.S. production, international markets play a significant and increasingly important role in shaping the platform's global catalog.

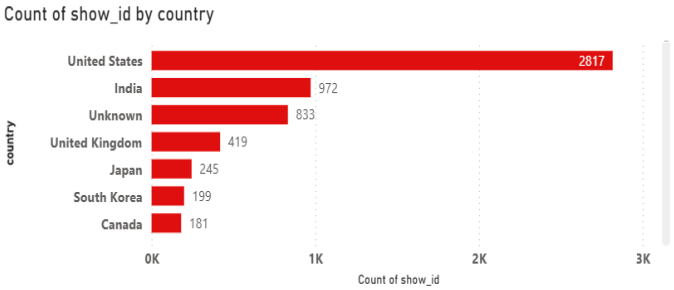

Fig 5. Country-Wise Netflix Title Count Using Clustered Bar

Question 6: ***How do genres vary within a specific country such as India?***

Answer: When filtering the decomposition tree by country = India, the analysis reveals three dominant genre groupings that characterize Indian content on the platform. The largest category is Comedies, Dramas, International with 120 titles, followed closely by Dramas, International with 118 titles, and Dramas, Independent with 108 titles. These patterns indicate that Indian titles on Netflix are primarily concentrated in drama-oriented and internationally themed genres, reflecting a strong narrative focus typical of regional storytelling. The distribution suggests that Netflix strategically curates content from India that aligns with broad audience appeal while also promoting culturally rooted narratives that resonate globally.

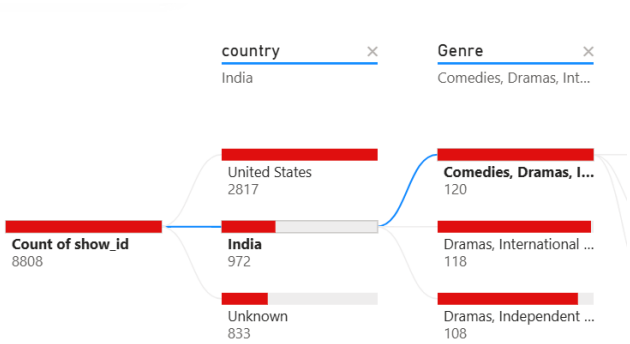

Fig 6. Genre Distribution for India Using Decomposition Tree

Question 7: ***What high-level insights can be derived from the key performance indicators (KPIs) displayed on the dashboard?***

Answer: The KPI indicators on the dashboard provide a consolidated overview of Netflix's content landscape and help contextualize the results derived from other visualizations. These indicators show that the platform hosts 8,803 titles spanning from 1925 to 2021, illustrating its extensive historical coverage and continuous growth over several decades. The presence of 515 unique genres and 4,526 directors highlights the substantial creative and thematic diversity embedded within the catalog, while the 18 different rating categories reflect the platform's ability to cater to a wide range of audience segments.

Fig 7. KPI Summary of Total Titles, Genres, Directors, and Ratings

V. RESULTS AND DISCUSSIONS

The comprehensive analysis of the Netflix dataset reveals several important patterns in global content distribution and platform strategy. TV Shows constitute the largest share of the catalog at 69.62%, suggesting Netflix's clear emphasis on long-format serialized storytelling, a trend that aligns with its rapid expansion after 2015. Movies, although sizable, display slower growth, indicating a secondary role in Netflix's content strategy. The year-wise analysis highlights a sharp surge in releases between 2015 and 2020, confirming an accelerated investment phase driven by international expansion, original productions, and diversified licensing agreements. The maturity rating distribution shows TV-MA and TV-14 as the predominant categories, establishing Netflix as a platform primarily oriented toward mature and teen audiences rather than exclusively family-centric consumption.

Genre patterns indicate that dramatic, documentary, and internationally focused content form the core of Netflix's offerings, with Dramas and International titles consistently dominating. Country-wise examination reveals that the United States contributes the majority of titles (2817), while India holds the second-largest share, reflecting the platform's increasing focus on Asian markets. The decomposition analysis further shows that Indian content clusters heavily around drama-based genres, indicating a strong cultural preference for narrative-driven formats across regional audiences.

The Power BI dashboard developed in this research plays a central role in translating complex Netflix metadata into meaningful insights through a range of interactive visualizations and KPI elements. The dashboard provides both high-level overviews and detailed drill-down capabilities, allowing real-time exploration of genre trends, regional contributions, and rating distributions. Filters for type, year, rating, and country enable users to identify structural patterns across different segments of the catalog. This implementation demonstrates how business intelligence tools can bridge the gap between raw streaming data and strategic media analysis, offering a scalable and interactive model for researchers, content planners, and media analysts seeking to understand global digital entertainment trends.

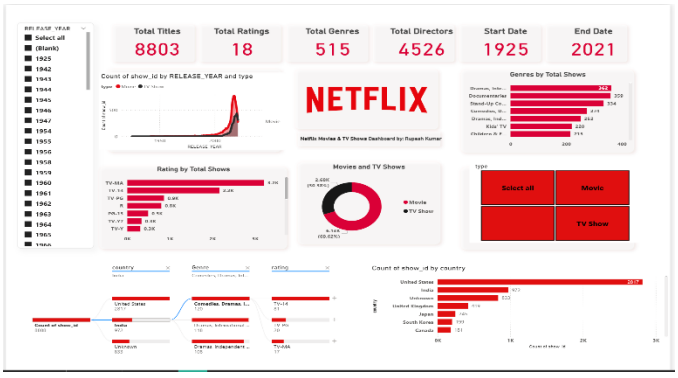

Fig 8. Dashboard 1st page

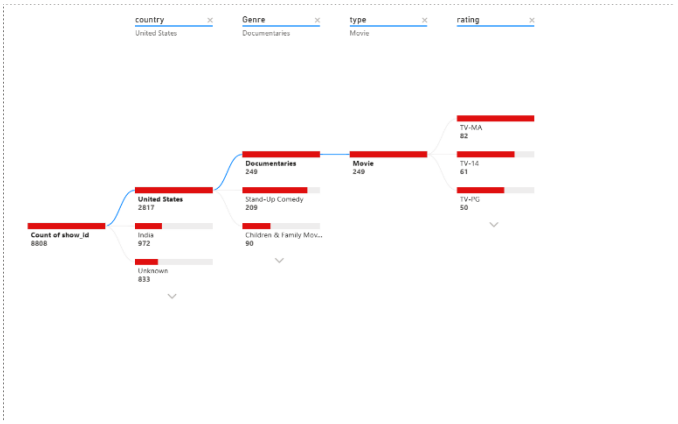

Fig 9. Dashboard 2nd page

Furthermore, a detailed drill-down analysis for the United States offers deeper insight into the composition of its content library. When filtering by genre, documentaries emerge as a major category with 249 titles, followed by stand-up comedy and children's content. Within the documentary segment, movie-type titles dominate, and maturity ratings show a clear distribution pattern, with TV-MA accounting for 82 titles, TV-14 for 61 titles, and TV-PG for 50 titles. This hierarchical breakdown demonstrates how Power BI enables granular exploration of relationships between country, genre, type, and rating. Such multi-level insights highlight the structural patterns of U.S. content, revealing both diversity and concentration within specific audience segments.

The identified patterns enable advanced analytics applications, allowing streaming services to forecast genre demand, optimize release timing, and tailor regional content strategies using historical growth trends, maturity rating distributions, and cross-country content contributions.

VI. CONCLUSION

This research successfully demonstrates the application of Power BI analytics in examining and visualizing key patterns within Netflix's global catalog of movies and TV shows. The analysis reveals that TV Shows constitute the dominant portion of the platform's library, supported by a rapid increase in content production between 2015 and 2020. Genre-level findings show a strong emphasis on dramatic, documentary, and internationally focused categories, while rating distributions highlight the platform's orientation toward mature and teen audiences. Country-wise insights identify the United States as the largest contributor, followed by India, demonstrating Netflix's expansion into diverse regional markets.

The interactive dashboard developed through this study provides a practical tool for real-time content exploration, enabling users to analyze trends across multiple dimensions including type, genre, rating, year, and country. By transforming raw metadata into coherent visual insights, this research establishes a framework for evidence-based streaming content analysis. The findings offer valuable direction for media researchers, content strategists, and analysts seeking to understand platform-level growth, regional representation, and evolving audience preferences. This work highlights the importance of dashboard-driven analytics in supporting informed decision-making within the digital entertainment industry.

VII. FUTURE SCOPE

While this study provides comprehensive descriptive analytics of Netflix's content library, several directions exist for extending the research further. The current dashboard can be enhanced with predictive modeling techniques, incorporating machine learning algorithms to forecast future content trends, genre demand, or regional growth based on historical patterns. Integrating additional external datasets, such as IMDb ratings, viewer engagement metrics, or social-media sentiment, would strengthen comparative evaluations and provide richer insights into content performance. Expanding the dataset to include multiple streaming platforms would enable benchmarking analyses, offering a broader perspective on Netflix's competitive positioning within the industry. Qualitative examination of narrative summaries or viewer reviews could complement the quantitative findings, generating deeper thematic understanding of audience preferences. Future implementations may also incorporate real-time data ingestion, allowing continuous updates to the dashboard as new titles are added to the platform. Additional research could explore the combined impact of localization strategies, genre evolution, and regional production trends on long-term platform growth.

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