



YouTube Songs Data Analysis

Analyzing Performance, Popularity, and User Engagement of YouTube Songs

Presented By Binoy Patra



The background of the slide is a dark, artistic composition. It features several glowing yellow musical notes of various shapes (treble clefs, eighth notes, sixteenth notes) floating across the frame. In the lower-left corner, there is a close-up, slightly blurred image of a hand holding a smartphone. The phone's screen displays a music player interface with a play button and some text in a non-Latin script. The overall lighting is warm and focused on the musical elements.

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Introduction

This project aims to conduct a comprehensive analysis of YouTube songs data using Power BI. The goal is to create insightful visualizations and reports that provide a deeper understanding of YouTube songs' performance, popularity, and user engagement.

The analysis aims to uncover trends, preferences, and patterns to aid content creators and stakeholders in optimizing their YouTube song content.



Objective

The main objective of this project is to

- 1. Data Cleaning and Preparation*
- 2. Exploratory Data Analysis (EDA)*
- 3. Content and Channel Analysis*
- 4. Temporal Trends Analysis*
- 5. User Engagement Insights*
- 6. Making an interactive dashboard using Power BI.*

A decorative header image featuring musical notes on a staff and a smartphone displaying a music app interface.

Dataset Overview

The dataset contains key attributes of YouTube songs such as:

- 1. video_id: Unique identifier for each YouTube video.*
- 2. channelTitle: Title of the YouTube channel publishing the song.*
- 3. title: Title of the YouTube song video.*
- 4. description: Description provided for the YouTube song video.*
- 5. tags: Tags associated with the YouTube song video.*
- 6. publishedAt: Date and time when the YouTube song video was published.*
- 7. viewCount: Number of views received by the YouTube song video.*
- 8. likeCount: Number of likes received by the YouTube song video.*
- 9. favoriteCount: Number of times the YouTube song video has been marked as a favorite.*
- 10. commentCount: Number of comments posted on the YouTube song video.*
- 11. duration: Duration of the YouTube song video.*
- 12. definition: Video definition or quality (e.g., HD, SD).*
- 13. caption: Availability of captions for the YouTube song video.*



Tools Used

- *Python and its libraries for data cleaning and preprocessing, EDA, and visualization.*
- *Power BI for creating an interactive dashboard.*
- *Canva for report making.*
- *GitHub for code preservation.*



Methodology

- 1. Extracting basic information about the data, checking for nulls, and duplicates.*
- 2. Data cleaning and preprocessing.*
- 3. Exploratory Data Analysis (EDA) and visualization.*
- 4. Content and Channel Analysis.*
- 5. Temporal Trends Analysis.*
- 6. User Engagement Insights.*
- 7. Creating interactive dashboards in Power BI.*
- 8. Preparing reports and recommendations.*



Content & Channel Analysis

- *Total Songs: 19,345*
- *Average Duration: 4.59 Minutes*
- *Average Likes: 87.18 Thousand*
- *Average Comments: 2,636 Thousand*
- *Average Views: 11.94 Million*
- *Video Definition Distribution: HD: 16,583 , SD: 2,762*
- *Channel Performance: T-Series with 19,345 songs*

Content & Channel Analysis



YouTube Songs Analysis

19.35K

Count of Video

4.59

Average Duration

11.94M

Average Viwes

87.18K

Average Likes

2.64K

Average Comments



Where Words Fail, Music Speaks.

Parameter

Comments

Likes

Views

All Songs

All Songs Songs Based On Views

Title	Selected_Parameter
Vaaste Song: Dhvani Bhanushali, Tan...	1536719459
Lut Gaye (Full Song) Emraan Hashmi,...	1333673024
DILBAR Lyrical Satyameva Jayate J...	1257657363
SIMMBA: Aankh Marey Lyrical Ran...	1217598096
Guru Randhawa: High Rated Gabru ...	1183904054
Cham Cham Full Video BAAGHI Ti...	1166497013
Guru Randhawa: Lahore (Official Vid...	1064521703
Bom Diggy Diggy (VIDEO) Zack Kni...	996655164
Leja Re Dhvani Bhanushali Tanish...	958559940
Full Song: KHAIRIYAT (BONUS TRACK...	941903968
SIMMBA: Aankh Marey Ranveer Si...	934317467
Bum Bum Bole (Full Song) Film - Taar...	925908922
'PREM RATAN DHAN PAYO' Title Son...	897064936
Official Video: Humnava Mere Song ...	884819674

Top 10

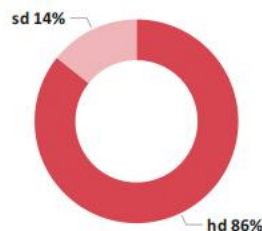
Top 15

Top 20

Top 5

Top 50

Video Definition Distribution



Annual Song Release Trends



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Temporal Trends Analysis

- *Song Releases: Analysis of the number of songs released each year.*
- *Views: Analysis of total views each year.*
- *Likes: Analysis of total likes each year.*
- *Comments: Analysis of total comments each year.*

Temporal Trends Analysis

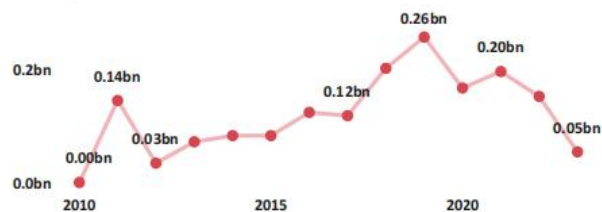


Yearly Statistics Analysis

Yearly Views Trends



Yearly Likes Trends



Yearly Comments Trends



Year

2023

Parameter

Comments

Likes

Views

Sorted by 2023 & Comments

Title	Year	Selected_Parameter
Pawan Singh: Tumhare Siva (Video) Khushb...	2023	120814
Adipurush (Official Trailer) Hindi Prabhas ...	2023	116694
Jawan: Zinda Banda Song Shah Rukh Khan ...	2023	79310
Where is Pushpa? Pushpa 2 - The Rule 🔥 ...	2023	69216
Tu Jhoothi Main Makkaar(Official Trailer) Ra...	2023	67120
Ram Siya Ram (Hindi) Adipurush Prabhas ...	2023	65341
Achha Sila Diya Jaani & B Praak Feat. Nora ...	2023	63104
Moon Rise (Video) Guru Randhawa, Shehna...	2023	60473
Jai Shri Ram (Hindi) Adipurush Prabhas Aj...	2023	56370
Jawan: Chaleya (Hindi) Shah Rukh Khan ...	2023	50019
Adipurush (Final Trailer) Hindi Prabhas Sa...	2023	45365
Dotara (Video) Jubin Nautiyal, Mouni Roy, Pa...	2023	44113
Shehzada Official Trailer Kartik Aaryan, Kri...	2023	42804
Alone: Kapil Sharma, Guru Randhawa, Yogita...	2023	40086
Character Dheela 2.0 (Video) Shehzada Kar...	2023	39028
Pasoori Nu: SatvaPrem Ki Katha Kartik Kiar...	2023	35075



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User Engagement Insights

- Total Songs: 19,345
- Average Duration: 4.59 Minutes
- Total Likes: 2 Billion
- Total Comments: 51 Million
- Total Views: 231 Billion
- Correlation between Views,Likes,Comments and Duation:

Parameter	Views	Likes	Comments	Duration
Views	1	0.906971	0.764075	-0.007209
Likes	0.906971	1	0.873397	-0.013867
Comments	0.764075	0.873397	1	-0.011446
Duration	-0.007209	-0.013867	-0.011446	1

- Covariance Matrix:

Parameter	Views	Likes	Comments	Duration
Views	3.01E+15	1.80E+13	5.23E+11	-2.47E+06
Likes	1.80E+13	1.30E+11	3.94E+09	-3.13E+04
Comments	5.23E+11	3.94E+09	1.56E+08	-8.93E+02
Duration	-2.47E+06	-3.13E+04	-8.93E+02	3.91E+01

User Engagement Insights



User Engagements

19.35K

Count of Video

4.59

Average Duration

231bn

Total Views

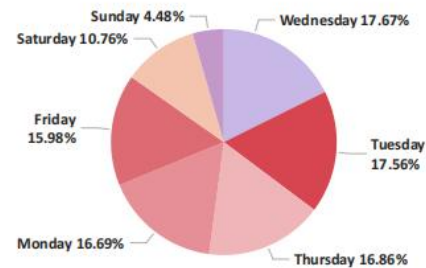
2bn

Total Likes

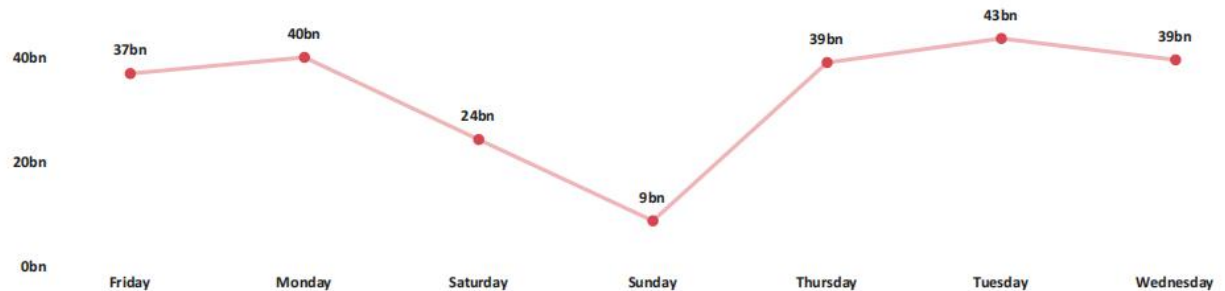
51M

Total Comments

Weekly Likes Trends



Weekly Views Trends



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Conclussion

1. Total and Unique Song Data:

- The dataset includes 19,345 unique songs, all from the T-Series channel.
- The data spans from 2010 to 2023, with notable variations in song releases and engagement over these years.

2. Temporal Analysis:

- Peak years for song releases include 2011, 2022, and 2016.
- Monthly analysis shows that May has the highest number of song releases, followed by April and July.
- Daily analysis indicates that Monday and Tuesday are the most active days for publishing songs, while Sunday sees the least activity.

3. Engagement Metrics:

- Statistical overview shows high variability in view counts, like counts, and comment counts.
- Maximum view count reaches over 1.5 billion, with an average of approximately 11.9 million views per song.
- Likes and comments also exhibit significant variability, with maximums of 12.8 million likes and 420,375 comments.



Conclusion

4. Content Quality and Accessibility:

- The majority of videos are in high definition (HD), accounting for 16,583 videos, while 2,762 are in standard definition (SD).
- Most videos do not have captions, with only 201 videos including captions.

5. Correlation and Covariance:

- Strong positive correlations exist between view counts, like counts, and comment counts, indicating that popular videos tend to garner high engagement across multiple metrics.
- Duration shows a weak correlation with other metrics, suggesting that the length of a song video has minimal impact on its engagement.

6. Skewness:

- All engagement metrics (viewCount, likeCount, commentCount) are highly skewed, indicating that a small number of videos receive exceptionally high engagement.

7. Day and Month Analysis:

- Weekdays, especially Monday and Tuesday, see higher engagement in terms of views, likes, and comments.
- The month of May stands out with significantly higher engagement metrics, followed by December and February.



Recommendations

1. Optimal Publishing Schedule:

- *To maximize engagement, content creators should consider publishing songs on Mondays and Tuesdays, particularly in May and December.*

2. Content Quality:

- *Maintaining high-definition video quality can enhance user experience and engagement.*

3. Caption Inclusion:

- *Increasing the availability of captions can make content more accessible to a broader audience, potentially boosting engagement.*

4. Content Strategy:

- *Focus on producing content that can achieve high view counts, as it correlates strongly with likes and comments, amplifying overall engagement.*

A hand holding a smartphone is the central focus, with the screen displaying a music player interface. The background is a dark, artistic composition featuring floating musical notes, treble clefs, and glowing bokeh lights in shades of orange and yellow. The overall theme is music and technology.

THANK YOU

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