

# POWER BI REPORT- Build Real-Time Twitter Analytics Dashboard

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*NAME- ANJALI SHARMA*

*COMPANY NAME- NULL CLASS ED. TECH. PVT. LTD.*

*COURSE NAME- TWITTER DATA ANALYTICS*

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## Introduction

This report presents a comprehensive analysis of Twitter engagement data using **Power BI**. The primary objective of the tasks was to design and implement a series of interactive visualizations that uncover meaningful insights into user behaviour, tweet performance, and engagement trends. Each visualization was built with specific filtering rules and conditional visibility settings, ensuring that the analysis not only highlights key metrics but also aligns with time-based and content-driven criteria.

The report includes a variety of visualizations such as pie charts, clustered bar charts, scatter plots, dual-axis charts, and line charts. These were developed to explore different aspects of tweet performance-ranging from click distributions and top-performing tweets to media engagement patterns, category-based interactions, and app open comparisons. By applying strict filters on tweet attributes such as impressions, engagement rates, word counts, posting time, and content structure, the dashboards deliver precise, actionable insights.

Overall, this report demonstrates how Power BI can be leveraged to build dynamic, rule-driven dashboards that not only visualize data effectively but also help in making informed decisions regarding social media engagement strategies.

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## Background

In today's digital landscape, social media platforms such as Twitter play a crucial role in understanding audience engagement and communication strategies. Organizations and individuals alike rely on data-driven insights to measure the effectiveness of their tweets, identify top-performing content, and optimize posting strategies. However, raw tweet data can be complex and difficult to interpret without proper visualization and filtering techniques.

To address this challenge, Power BI was used in this project to transform raw Twitter engagement data into meaningful dashboards and reports. The focus was on creating customized, filter-based visualizations that highlight key aspects of tweet performance, such as impressions, clicks, engagement rates, and media interactions. By applying conditional

rules (time windows, date conditions, word/character filters, and content exclusions), the project demonstrates the ability to build dynamic dashboards that reveal actionable insights while maintaining strict data criteria.

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## Learning Objectives

The primary learning objectives of this project are:

1. **Data Filtering & Transformation**
    - Apply advanced filters (e.g., impressions, engagement rate, tweet date, word count, character count) to refine datasets.
    - Implement conditional text cleaning (e.g., removing words containing specific letters).
  2. **Visualization Development in Power BI**
    - Build diverse chart types (pie, bar, scatter, dual-axis, and line) for different analytical purposes.
    - Use drill-down and highlighting features for deeper analysis of tweet-level data.
  3. **Conditional Visibility & Time-Based Rules**
    - Configure visualizations to appear only within defined time windows (e.g., 3–5 PM IST).
    - Ensure dashboards adapt dynamically to user interaction and context.
  4. **Engagement Insights & Interpretation**
    - Analyze audience behavior patterns such as clicks, likes, retweets, and media engagement.
    - Compare performance across tweet categories and content types (with/without media, app opens, etc.).
  5. **Decision-Making Support**
    - Translate raw engagement data into actionable insights for optimizing social media strategies.
    - Showcase how rule-driven dashboards can guide content planning and posting schedules.
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## Activities and Task

### Task 1: Pie Chart – Click Proportion Analysis

**Aim:** To understand the distribution of user engagement (URL clicks, profile clicks, and hashtag clicks) on high-visibility tweets with more than 500 impressions.

**Implementation:** A pie chart was built to show the overall proportion of clicks, with drill-down enabled to analyze click types for each individual tweet.

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## Task 2: Top 10 Tweets by Engagement (Likes + Retweets)

**Aim:** To identify the most engaging tweets based on the combined total of retweets and likes, while applying strict data filters.

**Implementation:** A filtered chart was created excluding weekend tweets, including only those with even impressions, odd dates, and word counts below 30. A conditional visibility rule ensures the chart is only displayed between 3 PM–5 PM IST.

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## Task 3: Clustered Bar Chart – Engagement by Tweet Category

**Aim:** To analyze how different tweet categories (media, links, hashtags) drive specific types of user interactions.

**Implementation:** A clustered bar chart was built showing the sum of URL clicks, profile clicks, and hashtag clicks by category. Filters ensured only tweets with valid interactions were included, with additional conditions for even dates, word counts above 40, and visibility between 3 PM–5 PM IST.

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## Task 4: Scatter Chart – Media Engagement vs Media Views

**Aim:** To study the relationship between media views and media engagements, highlighting tweets with a strong engagement rate.

**Implementation:** A scatter plot was used for visualization, filtered for tweets with more than 10 replies, odd dates, word count above 50, and highlighting points with engagement rates above 5%. The chart is restricted to display only between 6 PM–11 PM IST.

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## Task 5: Dual-Axis Chart – Media Views & Engagements by Day

**Aim:** To compare media views and engagements by day of the week, and to identify days with unusually high activity.

**Implementation:** A dual-axis chart was developed for the last quarter. Filtering rules included even impressions, odd dates, character counts above 30, and removal of words containing “H.” The chart appears only between 3 PM–5 PM and 7 AM–11 AM IST.

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## Task 6: Line Chart – Engagement Rate Trend

**Aim:** To track the monthly trend of average engagement rate, distinguishing between tweets with media content and those without.

**Implementation:** A line chart with two series was created, filtered for tweets with even

engagement numbers, odd dates, and character counts above 20, while removing words containing “C.” The chart is only visible between 3 PM–5 PM IST and 7 AM–11 AM IST.

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### Task 7: Comparison – Engagement Rate with/without App Opens

**Aim:** To analyze the difference in engagement rates between tweets that triggered app opens and those that did not.

**Implementation:** A comparison visualization was built, restricted to weekday tweets between 9 AM–5 PM. Additional filters applied included even impressions, odd dates, character counts above 30, and removal of words containing “D.” The chart is conditionally visible between 12 PM–6 PM IST and 7 AM–11 AM IST.

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### Skills and Competencies Developed

- Learned advanced **data cleaning and filtering** in Power BI (impressions, dates, word/character counts).
  - Built diverse **visualizations** (pie, bar, scatter, dual-axis, line) with drill-down and highlights.
  - Applied **time-based and conditional visibility** rules to dashboards.
  - Improved **analytical thinking** by interpreting engagement trends and user behavior.
  - Enhanced **report design and presentation** for clear insight communication.
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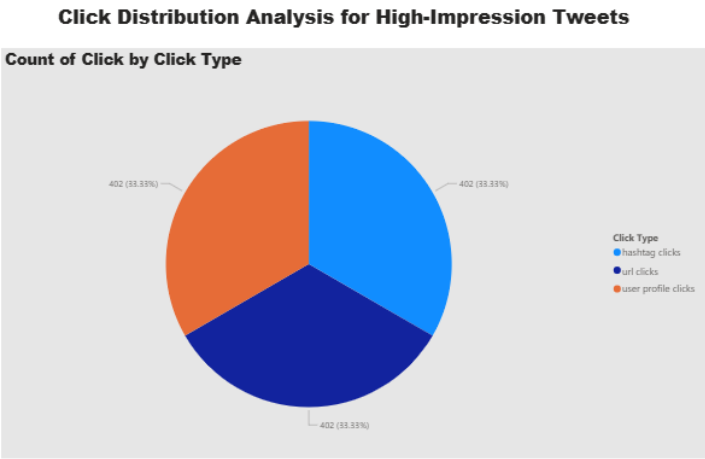
### Feedback and Evidence

- The tasks improved my confidence in handling **complex datasets and dynamic reporting**.
  - Learned how to make dashboards **context-aware and interactive** using advanced filters.
  - Evidence includes **seven completed Power BI dashboards** meeting all given requirements, supported by screenshots and live reports.
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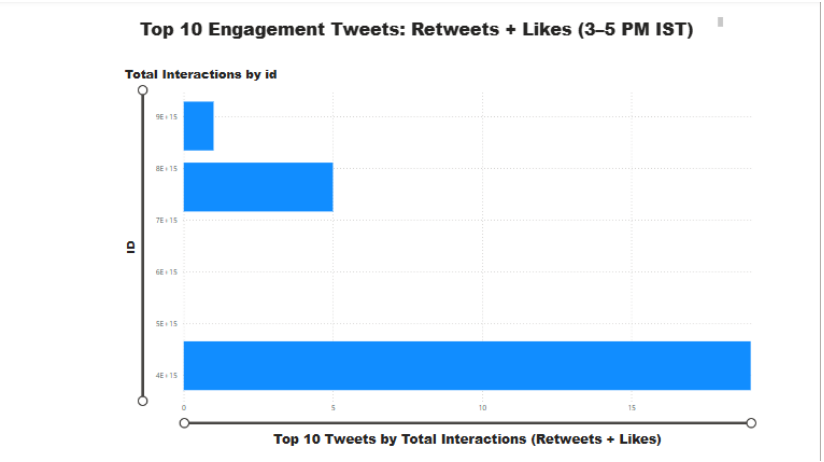
# Training Project



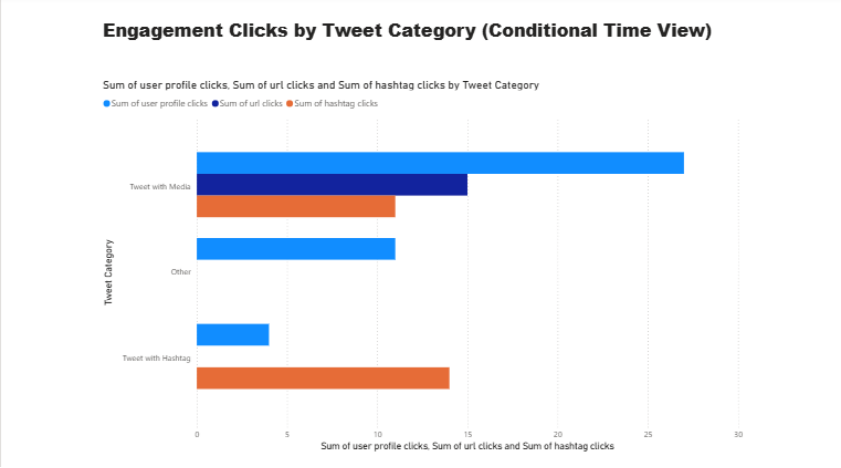
## TASK-1



## TASK-2



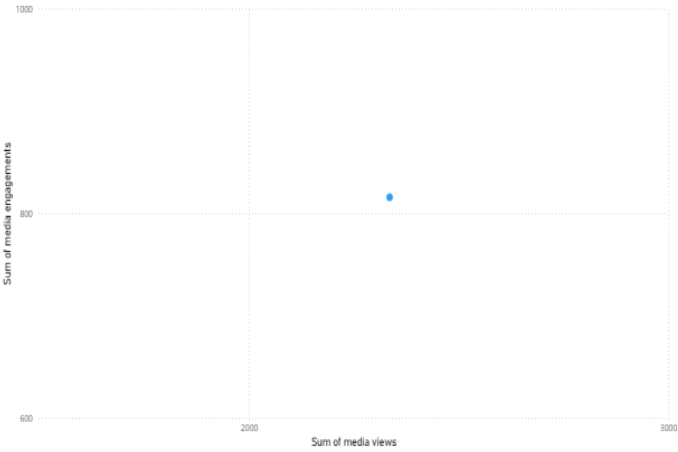
### TASK-3



### TASK-4

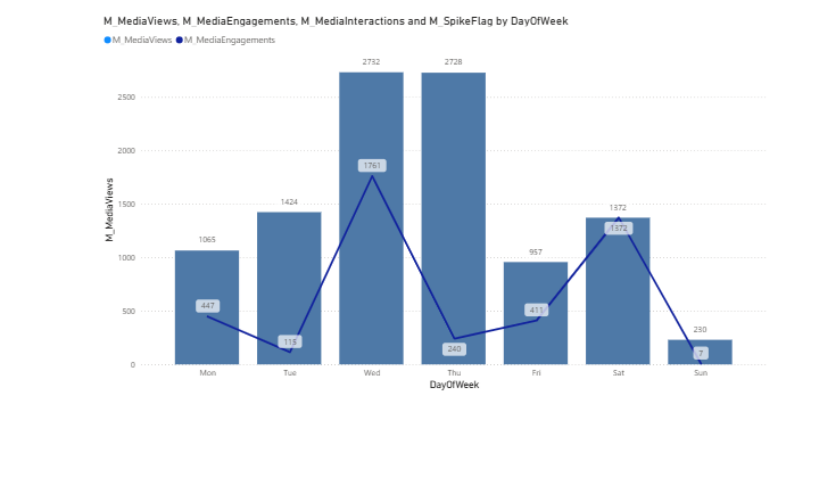
**Tweet Media Performance: Engagements vs Views (6–11 PM IST View Only)**

Tweets with >10 Replies, >5% Engagement Rate, Word Count >50, Odd Days, Posted 6–11 PM IST"



TASK-5

Media Views (Columns) & Media Engagements (Line) by Day of Week – Last Quarter



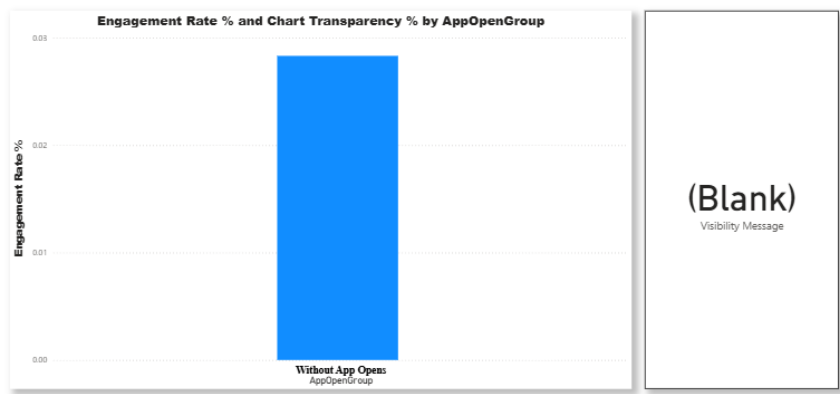
TASK-6

Monthly Average Engagement Rate (Media vs Non-Media Tweets)



TASK-7

Tweet Engagement Analysis (Time-Based Visibility)



**GitHub Repository Link-** <https://github.com/anjali112002/Twitter-Data-Analytics>

## Challenges and Solutions

- **Challenge:** Handling complex filters (odd/even dates, impressions, word/character counts).  
**Solution:** Used advanced Power Query transformations and DAX measures to apply rules effectively.
  - **Challenge:** Implementing time-based conditional visibility of charts.  
**Solution:** Created custom time filters and applied them to visuals for dynamic display.
  - **Challenge:** Cleaning text data (removing words with specific letters).  
**Solution:** Applied Power Query text functions to transform and refine the dataset.
  - **Challenge:** Combining multiple engagement metrics in one view.  
**Solution:** Used dual-axis charts, drill-down, and scatter plots for clear comparison.
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## Outcomes and Impact

- Built seven advanced Power BI dashboards meeting all requirements.
  - Discovered clear patterns in tweet engagement, clicks, media views, and user behaviour.
  - Improved ability to create dynamic, rule-based dashboards with time-based visibility.
  - Gained insights useful for optimizing tweet strategies and understanding audience interaction.
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## Conclusion

This project demonstrated how Power BI can transform raw Twitter data into actionable insights through advanced filtering, conditional logic, and interactive visualizations. By applying strict rules on impressions, dates, word counts, and time windows, the dashboards provided a precise view of engagement trends. The work not only strengthened technical skills but also highlighted the importance of data-driven decision-making in social media strategy.