**Twitter Analysis Project – Detailed Report**

**1. Introduction**

The increasing use of social media for brand engagement, marketing, and public communication has generated massive amounts of user interaction data. This project was centered around analyzing Twitter engagement using Power BI, a leading business intelligence tool. The focus was to not only visualize data but to dynamically control what gets shown based on the time of day and advanced tweet filters, simulating a real-time decision-support system.

**2. Background**

Organizations increasingly demand tools that provide meaningful insights from complex social media datasets. Twitter, a microblogging platform, presents unique analytical opportunities due to the volume and variety of user interactions such as likes, retweets, profile clicks, hashtag usage, and media views.

This project was initiated to develop a Power BI dashboard using Twitter data extracted into an Excel spreadsheet format (SocialMedia.xlsx). The requirement was to create advanced, **rule-driven visualizations** based on multiple dimensions including engagement metrics, tweet content properties (like character and word counts), timestamps, and other interaction types.

**3. Learning Objectives**

* Understand Twitter's engagement and interaction metrics and how they relate to content virality.
* Implement **multi-level filters** in Power BI dashboards, including text-based, numerical, and temporal logic.
* Learn how to create **time-sensitive visuals**, which appear or disappear based on system time, using DAX and dynamic visibility.
* Develop skills in data cleaning, DAX formula writing, Power Query transformations, and best practices in dashboard UI/UX.

**4. Activities and Tasks**

**✅ Task 1 – High Engagement Tweet Visual**

* **Chart Type**: Custom chart displaying the **top 10% tweets by engagement rate**.
* **Inclusion Criteria**:
  + More than **50 likes**.
  + Posted on **weekdays only** (Mon–Fri).
  + Tweet **character count less than 30**.
  + The graph should appear **only between 3:00 PM – 5:00 PM IST**.
* **Technical Highlights**:
  + Used WEEKDAY() function to filter weekdays.
  + Created a **DAX measure** to calculate engagement rate.
  + Used HOUR(NOW()) to control the **visibility** of the graph based on time.
  + Applied a **character count column** using Power Query to limit tweets.

**✅ Task 2 – Clustered Bar Chart by Tweet Type**

* **Chart Type**: Clustered bar chart showing:
  + Sum of **URL clicks**, **user profile clicks**, and **hashtag clicks**.
* **Grouped By**: Tweet category (e.g., tweets with media, links, hashtags).
* **Inclusion Criteria**:
  + Must have **at least one** of the three interaction types.
  + Tweet **date should be an even number**.
  + Tweet **word count must exceed 40**.
  + Graph **visible only from 3:00 PM to 5:00 PM IST**.
* **Technical Highlights**:
  + Used custom calculated column to classify tweets by type.
  + Applied logic using DAY([Tweet Date]) % 2 = 0 for even dates.
  + Added **word count measure** using LEN() and SPLIT() functions.

**✅ Task 3 – Media Engagement Dual Axis**

* **Chart Type**: Dual-axis line/column chart showing:
  + **Media views** and **media engagements** by day of the week.
* **Time Filter**: Visible only between **3 PM–5 PM IST** and **7 AM–11 AM IST**.
* **Inclusion Criteria**:
  + Tweet **impression count is even**.
  + Tweet **date is odd-numbered**.
  + Tweet **character count > 30**.
  + **Exclude tweets containing words with the letter ‘H’**.
* **Technical Highlights**:
  + Implemented dual visibility filter using DAX:  
    OR(AND(HOUR(NOW()) >= 7, HOUR(NOW()) <= 11), AND(HOUR(NOW()) >= 15, HOUR(NOW()) <= 17))
  + Used MOD() for checking even/odd dates and impressions.
  + Custom Power Query transformation to **remove words with 'H'** using pattern matching.
  + Highlighted spikes using conditional formatting or marker data points.

**5. Skills and Competencies Developed**

| **Skill Category** | **Details** |
| --- | --- |
| **Power BI Proficiency** | DAX, calculated columns, time filters, visuals, and interactivity |
| **Data Wrangling** | Power Query transformations, filtering by word/character count |
| **Analytical Thinking** | Breaking down requirements into measurable and visual filters |
| **Time-based Automation** | Dynamic chart visibility using system time |
| **Text Analytics** | Parsing tweet content, applying logic based on content and characters |
| **Soft Skills** | Requirement interpretation, time management, and report writing |

**6. Feedback and Evidence**

* The .pbix file demonstrates real-time data responsiveness and visual adaptability.
* Peer and mentor feedback appreciated the **precision of filter logic** and **dashboard cleanliness**.
* Time-based chart rendering was highlighted as a unique feature.
* Evidence of project completion includes the working .pbix file, Excel dataset, and this detailed report.

**7. Challenges and Solutions**

| **Challenge** | **Solution** |
| --- | --- |
| Implementing time-based chart visibility | Used DAX with NOW() and HOUR() functions and custom filters to hide visuals outside allowed hours |
| Filtering tweets with advanced text logic (e.g., removing words with 'H') | Used Power Query to split tweet content and apply case-insensitive text filtering |
| Multi-condition logic across date, impressions, word count, and categories | Carefully layered calculated columns and measures to satisfy all criteria without performance lag |
| Managing dataset size and refresh speed | Optimized queries and limited columns to only relevant ones to improve performance |

**8. Outcomes and Impact**

* Developed a sophisticated dashboard simulating real-world reporting scenarios.
* Demonstrated how **time-sensitive analytics** can drive smarter business actions.
* Gained strong practical exposure to **data modeling**, **real-time filtering**, and **visual storytelling**.
* The dashboard provides **insights tailored to decision-making windows**, which can be valuable in campaign timing and performance reviews.

**9. Conclusion**

This Twitter Analysis project provided in-depth exposure to data analysis, visualization, and conditional logic implementation in Power BI. From understanding tweet content metrics to applying rigorous filters based on time and content attributes, the experience enhanced both technical and analytical capabilities. The successful delivery of a fully functional and intelligent dashboard reflects the project's complexity and real-world applicability.