NULLCLASS INTERNSHIP REPORT

on

PROJECT TITLE: BUILD REALTIME TWITTER ANALYTICS DASHBOARD - POWER BI

Working as a Data Analyst Intern for the **NullClass**

From 28/02/2025 to 28/05/2025

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INTERNSHIP OBJECTIVE

The objective of this internship was to design and develop a comprehensive Twitter Analytics Dashboard using Power BI. The dashboard aimed to visualize key engagement metrics, understand user interactions, and generate actionable insights for data-driven decisions. The project emphasized advanced data filtering, conditional visualizations, and time-based interactivity to meet specific business requirements

INTRODUCTION

As a Data Analyst Intern, I was tasked with creating an interactive dashboard using Twitter data. The primary goal was to analyze engagement patterns, user interactions, and tweet performance metrics. The dashboard was designed to provide real-time insights while adhering to specific time-based display rules and complex filtering criteria. As part of this internship, I had to filter twitter data according to particular engagement criteria, apply time-based limits for dashboard visibility, and work with DAX formulae to generate bespoke computations.

BACKGROUND

Twitter, as a social media platform, generates vast amounts of data including retweets, likes, impressions, media views, and engagements. Effective analysis of this data is crucial for brands and businesses to understand audience behaviour, optimize content strategies, and enhance engagement

The key challenge was to dynamically control the visibility of different visualizations based on time-based conditions while maintaining data accuracy and performance. The dashboard was developed to help social media managers, marketers, and analysts make

informed decisions backed by real-time analytics. Power BI was chosen due to its robust data visualization capabilities and ability to handle complex data models with dynamic filtering and interactivity.

LEARNING OBJECTIVES

During this internship, I aimed to achieve the following learning objectives:

- Develop advanced data models with complex filtering criteria.
- Build practical Power BI skills in dashboard creation, feature utilization, and report optimization.
- Sharpen critical thinking and analytical abilities to effectively troubleshoot and solve Power BI challenges.
- Apply best practices for handling large datasets, optimizing queries, and improving Power BI dashboard speed.
- Grasp data modeling principles including relationships, normalization, and transformation for efficient models.
- Extract insights from social media data by analysing engagement metrics and KPIs for data-driven decisions.
- Implement dynamic time-based filters to control data visibility within dashboards.
- Master advanced DAX for custom calculations, dynamic filtering, and complex Power BI logic.

ACTIVITIES AND TASKS

I was assigned the following key tasks:

1. **Top 10 Tweets Chart**:
    - Visualized the top 10 tweets by combined retweets and likes.
    - Applied filters: exclude weekends, show user profile, allow display only between 3-5 PM IST, tweet impression even number, tweet date odd, and word count < 30.
2. **Scatter Chart**:
    - Plotted media engagements vs media views for tweets with >10 replies.
    - Highlighted tweets with engagement rate >5%.
    - Applied filters: display between 6-11 PM IST, odd tweet date, word count >50.
3. **Clustered Bar Chart**:
    - Analyzed sum of URL clicks, profile clicks, and hashtag clicks by tweet category.
    - Included tweets with at least one interaction.
    - Display rules: between 3-5 PM IST, even tweet date, word count >40.
4. **Engagement Comparison Chart**:
    - Compared engagement rate of tweets with and without app opens.
    - Applied filters: posted between 9 AM-5 PM weekdays, display between 12-6 PM & 7-11 AM IST, even impressions, odd date, character count >30, removed words containing 'D'.
5. **Dual-Axis Media Chart**:
    - Showed media views and engagements by day of the week for the last quarter.

- Highlighted spikes in media interactions.
- Filters: between 3-5 PM & 7-11 AM IST, even impressions, odd date, character count >30, removed words containing 'H'.

6. **Monthly Engagement Trend Line Chart**:
   - Plotted average engagement rate by month, comparing tweets with and without media.
   - Filters: between 3-5 PM & 7-11 AM IST, even engagement, odd date, character count >20, removed words containing 'C'.

SKILLS AND COMPETENCIES

 Data Analysis & Modelling: Mastered data transformation, modelling, and DAX in Power BI.

 Advanced Filtering & Logic: Implemented complex conditions (e.g., time ranges, character filtering).

 Visualization Design: Created intuitive charts with conditional formatting and dynamic interactions.

 Problem Solving: Addressed multifaceted business rules and requirements.

 Time-based Display Techniques: Learned to restrict visualizations based on IST time windows**.**

FEEDBACK AND EVIDENCE

The internship at NULLCLASS provided valuable insights into real-world data analysis. Feedback from mentors highlighted my ability to implement complex filters effectively, ensuring that the dashboards met all required business specifications. The dashboards created demonstrated proficiency in Power BI, data visualization, and structured data representation for actionable insights.

CHALLENGES AND SOLUTIONS

- **Challenge**: Complex filtering (time, word count, character removal, even/odd dates).
    - **Solution**: Utilized advanced **DAX expressions**, **Power Query** transformations, and **custom measures**.

- **Challenge**: Time-based dynamic visualization.
    - **Solution**: Implemented **dynamic measures and visibility rules** in Power BI to show/hide charts based on system time.

- **Challenge**: Removing words with specific characters.
    - **Solution:** Used the Text. Combine function in custom add column in Power Query Mode to dynamically remove unwanted characters from text fields.

OUTCOMES AND IMPACT

- Successfully delivered a fully functional, interactive dashboard tailored to complex requirements.
- Provided clear visual insights into Twitter engagement metrics, helping stakeholders make data-driven decisions.
- Enhanced my skills in Power BI, data modeling, and advanced filtering techniques**.**
- Increased proficiency in problem-solving through the application of creative solutions in DAX, data manipulation
- Deeper understanding of engagement metrics in relation to optimization of digital strategies.

CONCLUSION

This internship provided an excellent opportunity to apply theoretical knowledge in a real-world setting. I learned to handle complex data scenarios, apply dynamic filtering, and create engaging dashboards that translate raw data into actionable insights. The Twitter Analytics Dashboard project not only strengthened my technical skills but also improved my problem-solving and analytical thinking abilities, preparing me for future data analytics challenges.