

INTERNSHIP REPORT

DATA ANALYST INTERN

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Submitted to

NULLCLASS EDTECH PRIVATE LIMITED

Project title

BUILD REAL-TIME TWITTER ANALYTICS DASHBOARD - POWER BI

Duration

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Submitted as a record of internship experience at NullClass Edtech Pvt Ltd

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1. INTRODUCTION

This report outlines the work completed during my internship on the project titled Build Real-Time Twitter Analytics Dashboard using Power BI. It summarizes my internship experience at NullClass Edtech Private Limited as a Data Analyst Intern. It involved applying learned concepts from Power BI training to solve a practical business problem. The internship provided hands-on experience to data analysis, visualization, and dashboard development using Power BI and helped me enhance my skills in transforming raw social media data into meaningful insights.

The main objective of the project was to create a fully functional and interactive dashboard that could visualize user engagement on Twitter using real-time filtering and dynamic conditions.

During the course of the project, I worked with structured tweet data to analyze metrics such as impressions, likes, retweets, app opens, character and word counts, and post timing. I designed visuals to compare tweets based on specific engagement criteria, and I implemented logic to make those visuals respond to time-based visibility rules using DAX expressions.

The internship helped me build a stronger foundation in Power BI and improved my ability to handle real-world data challenges. It also strengthened my logical thinking, attention to detail, and overall understanding of how data can be transformed into meaningful insights through effective visualization.

2. BACKGROUND

The internship task was part of a practical training initiative provided by NullClass Edtech Pvt Ltd, aimed at developing hands-on experience in real-time data analytics using Power BI. Before beginning this internship, I completed a structured training module that covered essential Power BI concepts such as data import, transformation, modeling, and visualization.

This internship project built upon that foundation and required the application of advanced logic to solve a real-world business scenario involving Twitter data. The tasks challenged me to go beyond basic visuals and apply logical thinking, condition-based filtering, and time-aware components to create a more dynamic and meaningful dashboard.

3. LEARNING OBJECTIVES

The main objective of this internship was to apply practical knowledge of Power BI by developing a dynamic dashboard using real-time Twitter data. The project aimed to deepen my understanding of data visualization, business intelligence concepts, and analytical thinking, with a strong focus on solving real-world problems through interactive and insight-driven dashboards.

The learning goals included:

- **Enhancing Data Cleaning and Transformation Skills:** To work with raw Twitter data by cleaning, preparing, and transforming it using Power Query and Power BI's data modeling features.
- **Applying Data Visualization Techniques:** To design clear, insightful visuals that effectively communicate tweet engagement, comparison of app opens, and other performance metrics.
- **Developing Advanced DAX Logic:** To create calculated columns and measures for custom conditions, such as identifying tweets with even impressions, odd dates, specific character counts, or containing certain letters, and to control chart visibility based on the current system time.
- **Building Interactive, Filter-Driven Reports:** To create a user-friendly dashboard where users can apply filters and instantly see relevant tweet engagement results, improving decision-making.
- **Understanding Time-Based Dashboards:** To implement logic that makes charts appear or disappear depending on specific time windows (e.g., only between 3–5 PM IST or 7–11 AM IST), simulating real-time visibility conditions.

4. ACTIVITIES AND TASKS

As part of the Power BI training provided by NullClass Edtech Private Limited, I first created a comprehensive dashboard using sample datasets to practice key Power BI concepts such as data transformation, visual design, data modeling, and DAX calculations. This training phase helped me become familiar with the platform and prepared me to handle more advanced, real-world tasks during the internship.

Following the completion of the training module, I was assigned the internship project titled "Build Real-Time Twitter Analytics Dashboard using Power BI." The main focus of the internship was to enhance the existing dashboard by implementing dynamic visuals, applying conditional filters, and creating time-sensitive reports based on tweet data.

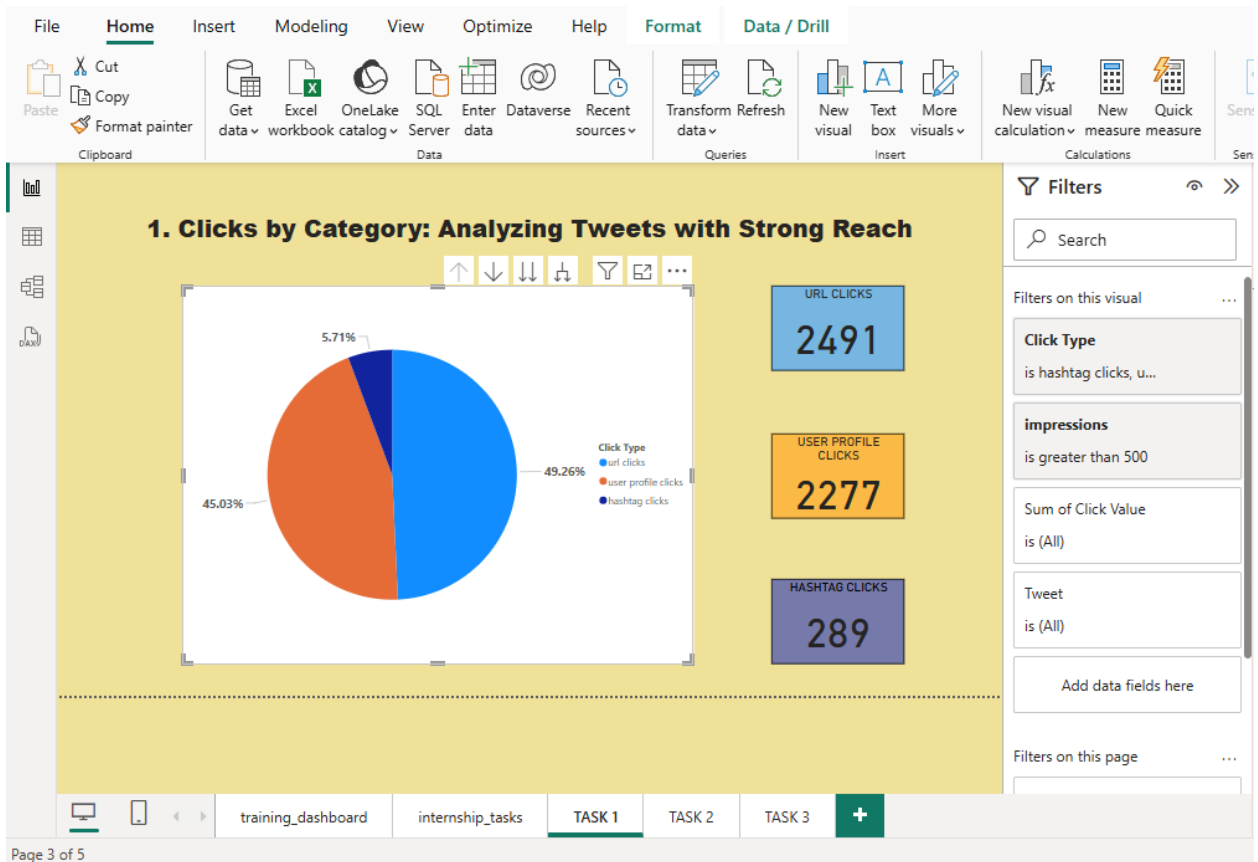
Below are the tasks I performed during the internship:

TASK 1: Clicks by Category: Analyzing Tweets with Strong Reach

Objective: Build a pie chart that represents the proportion of total clicks (URL clicks, user profile clicks, and hashtag clicks) for tweets with more than 500 impressions. Include a drill-down to view the specific types of clicks for each tweet.

Steps Followed:

1. Created a calculated column to sum up total clicks per tweet:
 - a. $\text{TotalClicks} = \text{URLClicks} + \text{ProfileClicks} + \text{HashtagClicks}$
2. Applied a filter to include only tweets with Impressions > 500.
3. Built a donut chart (or pie chart) to visualize total clicks by click type.
4. Enabled drill-down to show individual tweets and their respective click distribution.
5. Added data labels and formatted the chart for readability.



Task 1 – Pie Chart showing Total Click Types

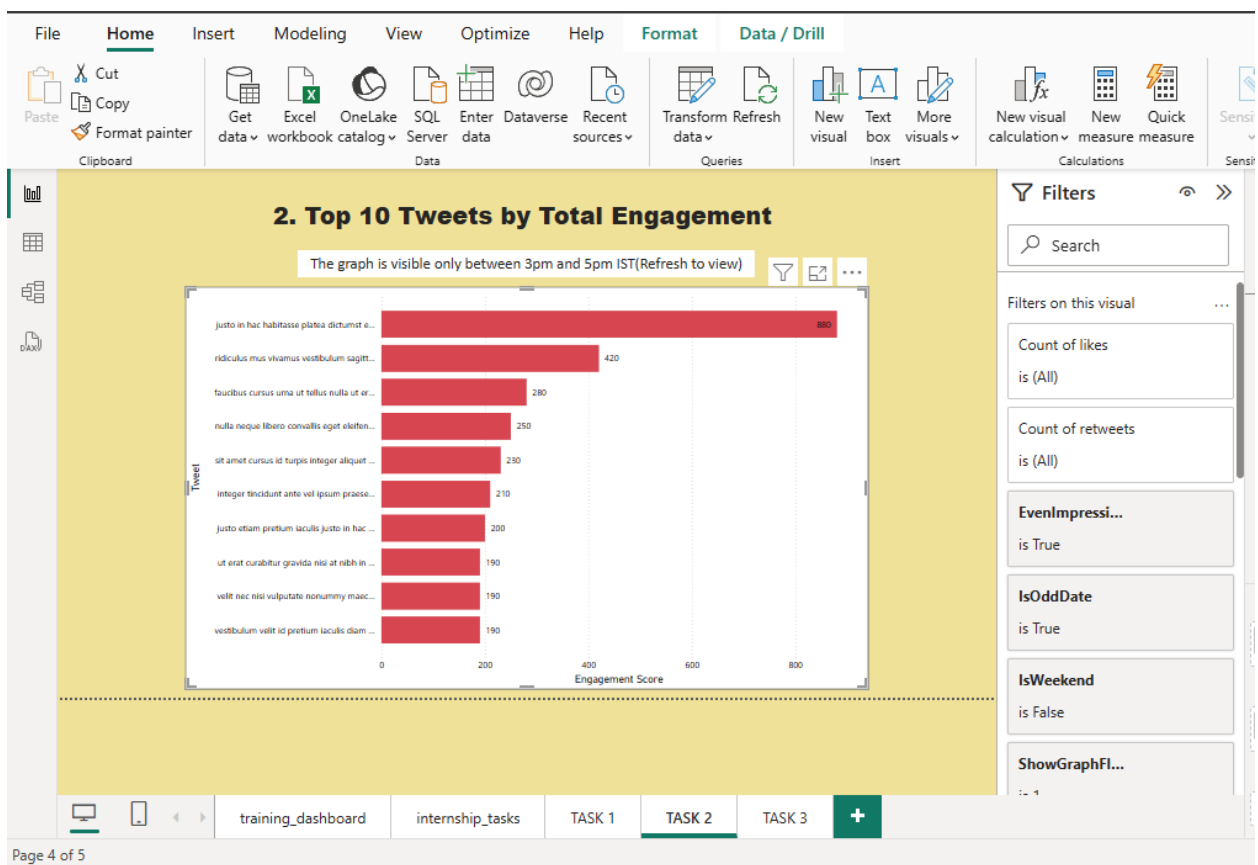
TASK 2: Top 10 Tweets by Total Engagement

Objective: Build a chart to identify the top 10 tweets by the sum of retweets and likes. Filter out tweets posted on weekends and show the user profile that posted each tweet and this graph should work only between 3PM IST to 5 PM IST apart from that time we should not show this graph in dashboard itself and the tweet impression should be even number and tweet date should be odd number as well as tweet word count be below 30.

Steps Followed:

1. Created a new column: $\text{EngagementScore} = \text{Retweets} + \text{Likes}$

2. Added a filter to exclude weekends by deriving the tweet day using WEEKDAY() and keeping only Monday–Friday.
3. Created EvenImpression and IsOddDate columns using DAX.
4. Added a word count column using LEN() and TRIM() to ensure word count < 30.
5. Built a bar chart to show the top 10 tweets sorted by engagement score.
6. Wrote a DAX measure ShowGraphFlag to check current system time and show the visual only between 3 PM and 5 PM IST.
7. Applied the ShowGraphFlag = 1 as a visual-level filter.
8. Final chart included dynamic time-based visibility and all conditions.



Task 2 – Top 10 Tweets by Engagement

TASK 3: Engagement Rate Comparison: Tweets With vs Without App Opens

Objective: Analyse tweets to show a comparison of the engagement rate for tweets with app opens versus tweets without app opens. Include only tweets posted between 9 AM and 5 PM on weekdays and this graph should work only between 12PM IST to 6PM IST and 7 AM to 11AM apart from that time we should not show this graph in dashboard itself and the tweet impression should be even number and tweet date should be odd number as well as tweet character count should be above 30 and need to remove tweet word which has letter 'D'.

Steps Followed:

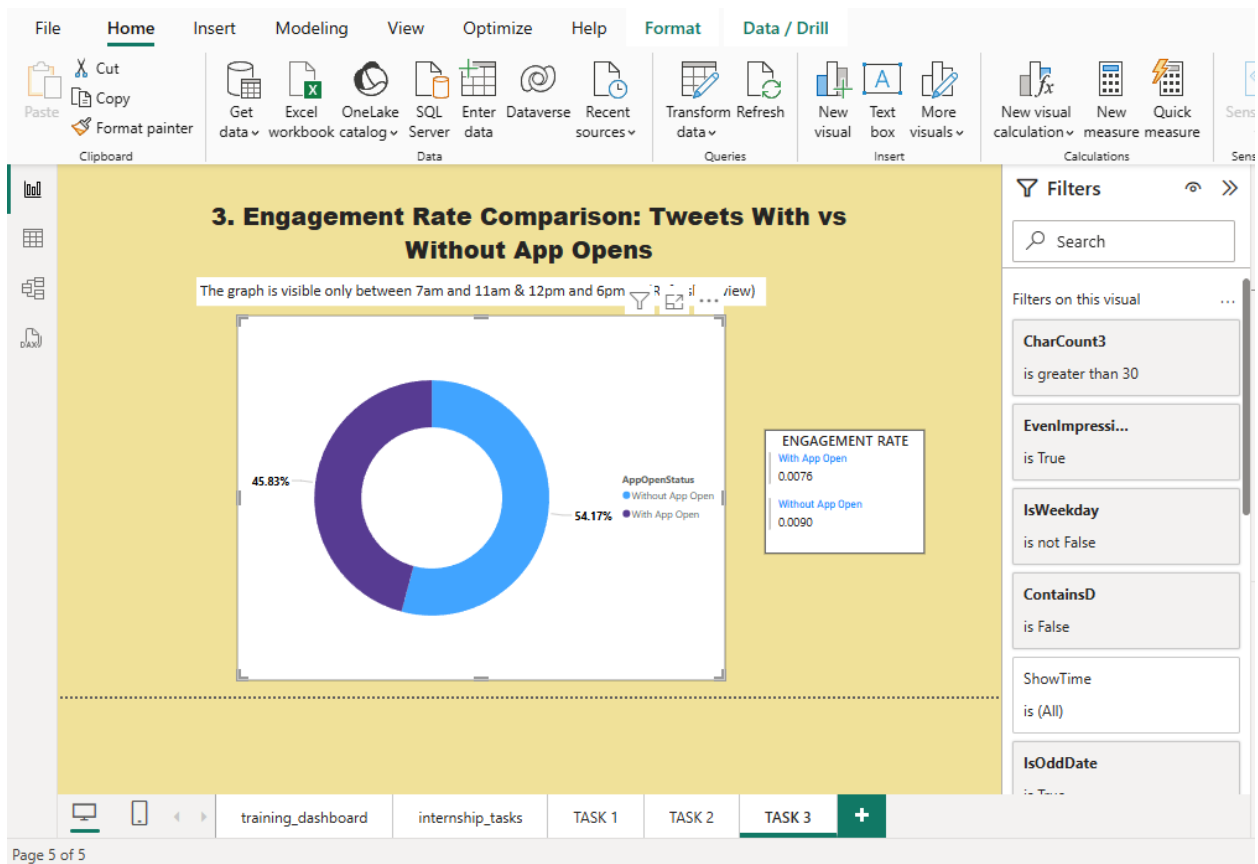
1. Calculated engagement rate:

$$\text{EngagementRate} = (\text{Likes} + \text{Retweets}) / \text{Impressions}$$

2. Filtered tweets:

- Posted on weekdays between 9 AM and 5 PM
- With even impressions and odd dates
- Character count > 30
- Excluding words containing the letter 'D'

3. Created a bar chart comparing app open vs no app open tweets.
4. Added DAX measure to show visual only between 7–11 AM and 12–6 PM IST.
5. Applied the time logic as a visual-level filter using ShowTimeIST = 1.
6. Final chart included dynamic time-based visibility and all conditions.



Task 3 – Engagement rate comparison

5. SKILLS AND COMPETENCIES

The internship allowed me to apply my learning in a practical setting and significantly improve both technical and problem-solving skills. Throughout the project, I developed the following competencies:

- **Dashboard Building with Real-World Logic:** Successfully built a fully interactive Power BI dashboard that met specific business rules and user interaction needs, including multi-level filters and time-based visibility.
- **Advanced Use of DAX in Practice:** Implemented complex DAX formulas to dynamically control visuals, calculate engagement rates, filter data by specific text conditions, and manage logic based on system time.
- **Precision in Filtering and Conditional Logic:** Handled multiple conditions simultaneously—like even impressions, odd dates, tweet length, and content exclusion—ensuring only valid tweets were displayed.
- **Debugging Visual Conflicts:** Recognized issues caused by overlapping filters and resolved them by adjusting logic and validating dataset outputs. This improved my ability to troubleshoot and refine dashboards.
- **Efficient Data Structuring:** Structured raw data into meaningful columns and formats for analysis. Derived calculated fields like EngagementRate, IsOddDate, CharCount, and more to support visual logic.
- **Time-Sensitive Visual Management:** Developed dashboards that respond to current time in IST, with visuals appearing or disappearing based on time windows — simulating real-time responsiveness.

6. FEEDBACK AND EVIDENCE

The training modules provided by NullClass Edtech Pvt Ltd were extremely helpful in building my foundational understanding of Power BI. Even as a beginner, I was able to follow the structured content and gradually learn how to handle data, build visuals, and apply DAX expressions effectively.

Throughout both the training and internship phases, I received timely support from the team. Any doubts or technical difficulties were promptly resolved through scheduled Google Meet sessions or via Google Forms. This consistent guidance helped me complete each task with clarity and confidence.

The final project was submitted through a GitHub repository as per the internship requirements, which included the completed Power BI .pbix file.

7. CHALLENGES AND SOLUTIONS

During the internship project, I encountered several challenges while implementing specific conditions and building responsive visuals. Below are the key issues and how I addressed them:

Challenge 1: Time-Based Visual Control Not Displaying as Expected

Issue: Some visuals remained hidden even during the intended active time range.

Solution: I reviewed and corrected the DAX logic to ensure the system time was properly converted to IST and aligned with the dashboard's visibility conditions. I used `NOW()` with a `+ TIME(5,30,0)` adjustment to sync with IST.

Challenge 2: Tweet Time Filter (9 AM–5 PM) Returning No Matching Data

Issue: While working on Task 3, I attempted to filter tweets to include only those posted between **9 AM and 5 PM**. However, due to the presence of multiple other strict filters (even impressions, odd dates, character count > 30, and text exclusion for letter 'D'), no tweet records met all conditions together. This resulted in only `FALSE` values in the filter column, making the visual return blank.

Solution: I tested each filter individually and confirmed that the time condition was not compatible with the remaining filters. I retained the other conditions and noted this limitation in the report to explain the absence of data for that specific time filter.

8. OUTCOMES AND IMPACT

Completing this internship project allowed me to apply the Power BI concepts I had learned during training in a practical, task-driven environment. One of the key outcomes was my ability to design a fully functional and interactive dashboard that could handle complex conditions and time-based visual logic—skills that are highly relevant in real-world data analytics roles.

Through this project, I developed a strong understanding of how to translate business requirements into clear, actionable visuals. I gained experience in working with structured datasets, applying multiple filters, creating calculated columns and measures using DAX, and managing visuals based on time constraints. These outcomes not only enhanced my technical proficiency but also improved my analytical thinking and attention to detail.

The impact of this internship goes beyond just completing a set of tasks. It gave me confidence in independently handling data projects, strengthened my problem-solving skills, and provided a clearer understanding of how data visualization supports real-time business decision-making. I am now more comfortable working with Power BI in a professional setting and feel prepared to take on more advanced projects in data analytics.

9. CONCLUSION

This internship with NullClass Edtech Pvt Ltd provided me with valuable hands-on experience in applying Power BI to solve real-world data challenges. Through the project “Build Real-Time Twitter Analytics Dashboard,” I learned how to translate business logic into interactive dashboards, apply advanced filtering using DAX, and manage visuals based on dynamic conditions such as time and data content.

The training modules gave me a solid foundation to start with, and the tasks helped me build confidence in using Power BI independently. From handling complex filter logic to resolving challenges in visual display, each step of the internship contributed to my growth as a data enthusiast.

Overall, this experience has strengthened my technical skills, enhanced my analytical thinking, and prepared me to take on future projects in data analysis and visualization with greater confidence and clarity.