APPROACH DOCUMENT

Project title: Tesla Social Media Analytics for Strategic Branding

Project Objective: Build a complete Social Media Intelligence Solution in Excel that consolidates Tesla's raw data into business insights, answering strategic questions and empowering Tesla's digital team to make data-driven marketing decisions.

Dataset Description:

Posts Dataset :
- Contains individual Tesla posts across platforms.
- Used for content performance, engagement analysis, and hashtag effectiveness.
- **Example fields:** PostID, Platform, Date, ContentType (Video, Image, Tweet, Carousel), Hashtags, Likes, Shares, Comments, Clicks, Impressions.

2. Engagement Summary Dataset
- Aggregated weekly dataset tracking platform-level performance.
- Helps evaluate follower growth, ad spend effectiveness, engagement trends.
- **Example fields**: Week, Platform, Followers_Gained, Ad_Spend, Total_Engagement.

3. Campaign Metadata Dataset
- Information about Tesla campaigns (e.g., Cybertruck Launch, FSD Beta Rollout, Sustainability Awareness).
- Tracks campaign objectives, spend, impressions, engagement uplift.

Tasks:
Task 1: Data Preprocessing & Cleaning

Steps Performed :

1. **Eliminated Duplicates:**

   I used Power Query to eliminate duplicate posts according to the PostID column since every post is labeled with a unique PostID. . I used Power Query because it is the best method in Excel for cleaning and transforming data.

2. **Standardized Platform Names:** In the Platform column, I standardized the naming of all appearances of "Twitter" and changed them to "X".

3. **Formatted Dates and Data Types:** I formatted the Date column to show the date in DD-MM-YYYY format. Besides, I also moved each column to its proper data type (i.e. numbers for Likes and Impressions, text for Hashtags, etc.) for clearer reading purposes.

4. **Hashtags Separated:** The Hashtags were together, separated by "," as such:
   #FutureOfDriving,#AnytimeIsTeslaTime

   For this, I used the **"Split Column by Delimiter"** in Power Query to separate them into separate columns, much like this:

Hashtags Used.1	Hashtags Used.2	Hashtags Used.3
#FutureOfDriving	#AnytimeIsTeslaTime	
#TeslaCoInnovation	#BetterWithTesla	
#TeslaCoInnovation		
#EVRevolution		
#EVRevolution	#TeslaCoInnovation	
#TeslaCoInnovation		
#TeslaCoInnovation		
#EVRevolution		
#TeslaCoInnovation		
#TeslaCoInnovation		

Result:
After cleaning, the data was tidy and presented well, with duplicates removed, platforms and dates standardized, numbers formatted, and hashtags separated into their own columns, providing for better analysis.

Task 2: Engagement Analysis

Steps Performed :

1. **Calculated Engagement Rate:** I applied the formula for every post within the Posts Dataset.

   Engagement Rate = (Likes + Shares + Comments) / Impressions

2. **Found the Top 10 Tesla Posts:** Once I computed the engagement rate, I sorted the dataset from highest to lowest. Then, I selected the Top 10 Tesla posts with the highest engagement rating.

3. **Created a Pivot Table of Total Likes, Shares, and Comments:** In a new sheet, I created a Pivot Table. I placed Platform and Content Type within the Rows area and Likes, Shares, and Comments into the Values area. This then helped me compare very quickly which Platforms and Content Types received the most engagement.

4. **Calculated Average Clicks per Hashtag:** Where hashtags was separated at the start, I join columns back above, and surplus column joined them together with the formula:

=TEXTJOIN(", ", TRUE, [@[Hashtags Used.1]], [@[Hashtags Used.2]], [@[Hashtags Used.3]])
Next, I generated an additional Pivot Table from this combined hashtag column. I included the hashtags as a Rows value and Average of Clicks as a Values value in order to identify what hashtags had the most success.

5. **Top-Performing Hashtags Highlighted:** I created a pivot table in another sheet using the unsplit hashtag column from the posts sheet.I included the Hashtags as a Rows value and Average of Clicks as a Values value. This helped me identify the **top-performing hashtags** like **"#AnytimeIsTeslaTime,#EVRevolution,#TeslaCoInnovation,#FutureofDriving".**

Result :
I discovered which platforms and content types engaged audiences the most, and I identified the Top 10 most engaging posts for Tesla. I also highlighted which hashtags performed the best, giving insight to their audience. Would be enough for readers to know where they audience engages with and wants from Tesla content.

Task 3: Platform Analysis Steps

Performed :

1. **Found Platform with Highest Engagement:** Created a Pivot Table with **Platforms** in the *Rows* area and **Average Engagement Rate** in *Values*. Found that **Instagram** had the highest engagement rate among all platforms.

2. **Compare follower growth:** From the Engagement Summary document, I created yet another Pivot Table utilizing Start of Week in rows, Platforms in columns and the Sum of Follower Growth in values.And I observed that Twitter (X) had the highest follower growth and Facebook had the lowest follower growth. Inserted a **line graph** for better visualization of weekly follower growth trends.

3. **Visualize Engagement vs. Ad Spend per platform:** Created a **scatter plot** using **Ad Spend** (X-axis) and **Engagement Rate** (Y-axis) across all platforms. The R^2 values were very low (below 0.02), showing **no strong relationship** between ad spend and engagement.This means higher ad spending did not guarantee better engagement.

Engagement vs. Ad Spend per platform.
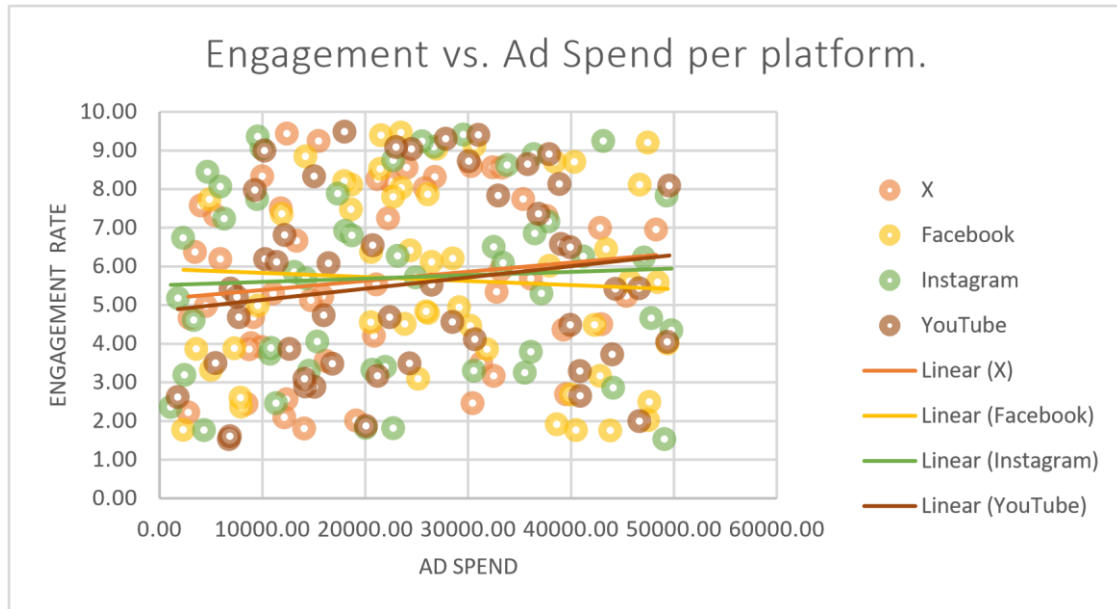
4. **Recommendation :**As a strategy, Tesla should adopt a tiered approach per platform:

- Twitter (X): for real time updates/announcements.
- Instagram: for visual and storytelling / community / social engagement.
- YouTube: for large product announcements or demonstrations primarily.
- Facebook: for lead generation and customer service.

Result: Instagram drives the highest engagement, Twitter leads in follower growth, and ad spend has little effect on engagement. A balanced multi-platform strategy is recommended.

Task 4: Hashtag & Content Strategy

Steps Performed :

1. **Identify most frequently used Tesla hashtags:** I unpivoted the split hashtags in Power Query (Post ID, Engagement Rate, Attribute, Value). Then I created a Pivot Table → Hashtags in Rows and Values (Count).Insights:

- #TeslaCoInnovation used the most with 107 times,
- #FutureOfDriving used 103 times,
- #SmoothLikeNitroTesla used the least with 5 times.

2. **Compare average performance of posts containing each hashtag:** Then I created another Pivot Table → Hashtag in Rows/Columns and Avg Engagement Rate in Values. Insights:

- #EVRevolution with the highest AER of 15.39% and used in 102 posts.
- The overall average engagement rate was 14.45%
3. **Compare content performance:** Using Posts sheet → I created a Pivot Table with Platform + Content Type in Rows and Avg Engagement Rate in Values. I also added slicers for the Platform and Content Type. Insights:
    - Instagram Video had the highest AER of 20.62%
    - The overall AER for the content across all the content type = 14.38.

4. Content Type Recommendations:
    - Instagram and Facebook focus on Video (getting the best engagement).
    - YouTube and X focus on Carousels for swipeable multi-graphic posts.
    - Facebook has weak engagement overall, but video did perform the best (12.9%)
    - Using a platform specific strategy will likely improve engagement and conversion ROI.

Result: video content performed the best overall; Carousels on YouTube best.

Task 5: Campaign Effectiveness

Steps Performed :

1. **Total & Average Impressions, Likes, and Clicks per Campaign**: I constructed a Pivot Table using the Posts sheet. I included Campaign Name and Platform as Rows and Impressions, Likes, and Clicks (Sum and Average) as Values. I inserted a slicer for Campaign Name as well.Insights:
    - SustainabilityDrive - Greatest total Impressions and Clicks
    - Model Y Campaign - Greatest average Clicks

2.Engagement Uplift (During vs. Before Campaigns): I used VLOOKUP function to get Start Date and End Date from "Campaign Metadata Dataset." I constructed calculated columns:

- **Period:** before or during the campaign.
- **Engagement:** Likes + Shares + Comments + Clicks.
- **Before / During Averages** used AVERAGEIF.
- **Uplift** calculated as (during - before) / during.

I built a Pivot Table (Platform + Campaign Name in Rows; Before, During, Uplift in Values). I inserted slicers for Campaign Name and Platform.

3.Campaign ROI (Engagement vs. Spend): I constructed a table with Campaign Name, Total Budget, Total Engagement and ROI = Engagement / Budget. I used SUMIFS to identify the total engagement (Likes + Shares + Comments + Clicks). Insights:

- SustainabilityDrive - Greatest ROI (1.3954)

- FSD Update - Lowest ROI (< 1, not a cost effective qo)
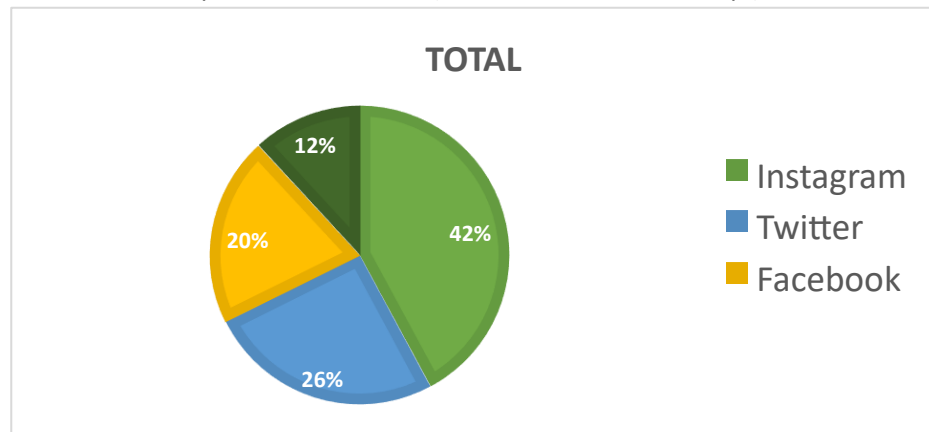
4.Follower Growth Analysis: I constructed a table with the Campaign Name, Start Date, End Date, Target Platform, from the metadata. I used SUMIFS to sum New Followers during each campaign period per Platform. I built a Pivot Table (Platform + Campaign Name in Rows; Sum of New Followers in Values). Insights:

- Instagram - Greatest follower growth (15,102 new followers), Twitter, Facebook, YouTube

Result: The *SustainabilityDrive* campaign was the most successful overall — showing the best ROI and strong engagement uplift. Instagram was the top platform for follower growth.

**Task 6: Follower Retention & Loyalty**

Steps Performed :

1. **Weekly Follower Growth (Line Chart):**A new column was added to the Engagement Summary →

Net Followers Gained = New_Followers – Unfollows

A Pivot Table was created with Week_Start_Date in Rows, Platform in Columns, and a Values of the Sum of Net Followers Gained. A Line Chart was inserted with a slicer for Platform. Insight:

- YouTube and X had the most variation.
- Instagram and Facebook had more stability but lower growth overall.

Weekly Net Follower Change by Platform
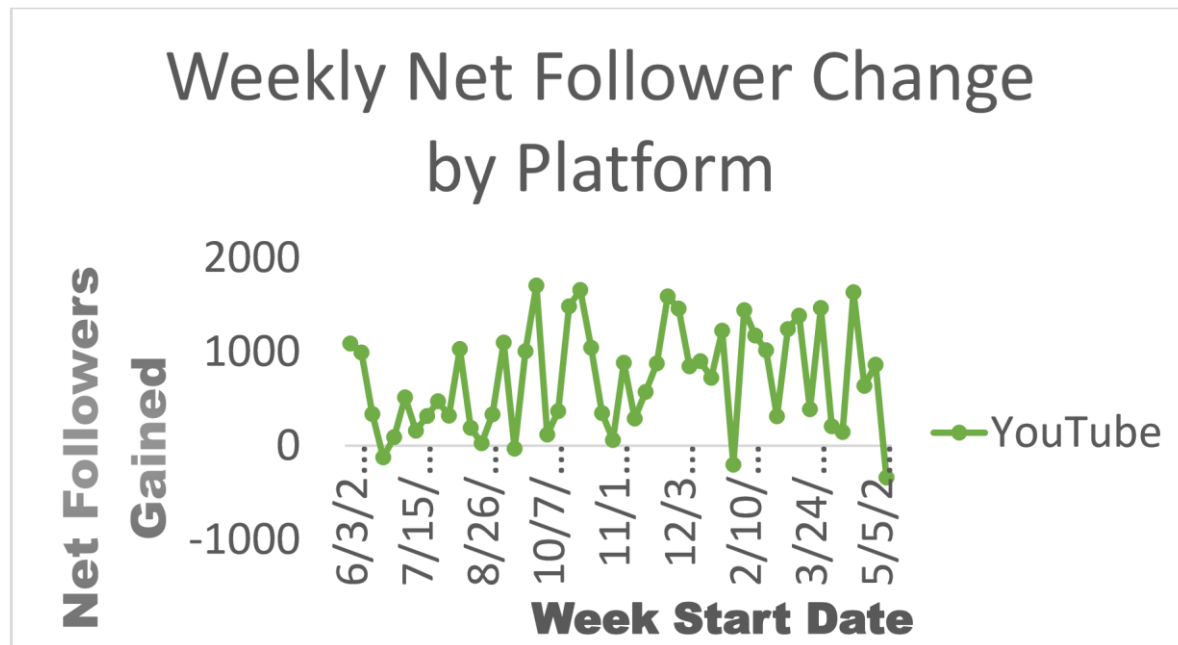
2.**Peak Week of Follow Growth**: Used Pivot Table (Week_Start_Date in Rows, Sum of Net Followers in Values). Sorted in descending order to find the peak week. **Insight:**

- Peak week reached around **6,000 new followers**.
- Despite weekly variations, there's a mild upward trend in overall follower base.

3.Moving Averages to Smoothing the Trend: Created another Pivot Table (Platform as Filter, Week_Start_Date in Rows, Net Followers Gained in Values). Applied **3-week moving average** to smooth trend lines.Helped visualize long-term follower retention trends per platform.

4.Correlation Ad Spend vs. Follow Growth (Scatter plot): A table was developed with the following data: Platform, Ad Spend, and Net Followers Gained. A formula was used:

=CORREL(Ad_Spend_Range, Net_Follower_Range)

Results: YouTube → Highest; (r = 0.234, weak positive correlation) All others = near zero; meaning there is essentially no linear relationship between Ad Spend and Follower Growth.
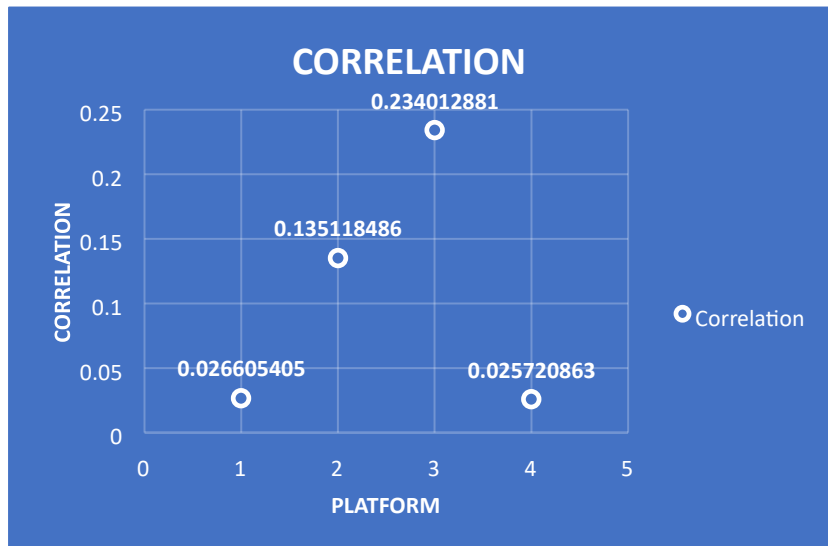
CORRELATION

Result:

Follower growth showed irregular patterns, with YouTube having the most variability and weakest ad spend correlation. Moving averages revealed mild upward trends, indicating gradual but inconsistent growth across platforms.