

## ***Selected Application for Trend Analysis: Snapchat***



### **Trend Analysis:**

Trend analysis is a statistical technique used to analyse time-based data to understand the direction in which something is moving. It involves gathering information from various periods and comparing it to detect any consistent results or trends. In businesses, trend analysis is often used to predict future movements based on historical data.

### **Steps involved in Trend Analysis:**

#### **1. Data Collection:**

- It involves gathering the data we want to analyze. The data should include a time component, such as dates or timestamps. In trend analysis, this data will typically involve a series of observations taken at different times.

#### **2. Data Preprocessing:**

- Cleaning the data: Removing or imputing any missing or erroneous data points.
- Convert the data into a format suitable for analysis. It involves handling missing values, dealing with outliers, and transforming the data into the appropriate format.

#### **3. Visualizing the Data:**

- Visualizing the data using graphs such as line plots, scatter plots, or bar charts. It is the key for understanding the behavior of data over time.

**4. Trend Identification:**

- Determining the type of trend: increasing, decreasing, or stable.
- Using statistical methods to identify the trend.

**5. Regression Analysis:**

- Performing regression analysis to quantify and understand the trend mathematically.
- Fitting a trend line to the data.

**6. Forecasting:**

- Using the identified trend to make predictions about future values.
- Forecasting helps in predicting future values based on the identified trend.



**7. Model Evaluation:**

- Evaluating the accuracy of the model using appropriate metrics.

## *Snapchat*

Snapchat is a multimedia and direct messaging application that enables users to send quick pictures, videos and messages to other users. These “Snaps” are only available to be viewed for a short time span before it is deleted permanently. This feature perhaps makes it, for some users, different and more attractable than other social network applications. Snaps posted by a user can be viewed either by “Friends” or “Followers”. Friends add each other to their contact list



in order to view each other snaps. However, followers may view the snaps of users they follow without being added to their contact list. It is not easy to find friends on Snapchat without knowing their username. However, Snapchat made it easy to add friends

using their phone numbers under a service called “Find Friends”. One final feature of Snapchat worth mentioning is “My Story” where snaps posted there last for twenty-four hours to be seen by friends and followers before it disappears.

Usage of Snapchat has been grown rapidly ever since its initiation in 2011 by its founders who were three undergraduates at Stanford University. From 2012 to 2015, Snapchat has shown an approximated growth of **90 million users**. Also, a Business Insider article in 2017 has reported that Snapchat has collected about 158 million users that would use the app each day for an average of 25 - 30 min, which shows their satisfaction with the app. This frequent use of Snapchat has made it one of the top messaging apps like Facebook messaging and SMS



### Global Advertising Audience of Snapchat

Let us perform Snapchat trend analysis by following the forementioned steps

#### Step 1: Data Collection

- The data required for this analysis was sourced from this site [Snapchat Demographic Stats: How Many People Use Snapchat in 2024? \(backlinko.com\)](#)
- The data set contains information about Snapchat's daily active users growth since 2012, which was divided in to 4 quarters per year.



#### Loding Required Libraries:

```
import pandas as pd
import matplotlib.pyplot as plt
from numpy.polynomial.polynomial import Polynomial
```

#### Exploratory Data Analysis

**Data Loading:**

```
# Creating the dataframe
df = pd.DataFrame(pd.read_excel(r"/content/drive/MyDrive/Data Science
Projects/snapchat.xlsx"))

# Display the data
df.head()
```

	Date	DAU (in Millions)
0	Q2 2012	0.10
1	Q4 2012	1.00
2	Q1 2013	8.04
3	Q2 2013	17.53
4	Q3 2013	25.62

**DAU – Daily Active Users of Snapchat****Step 2: Data Processing**

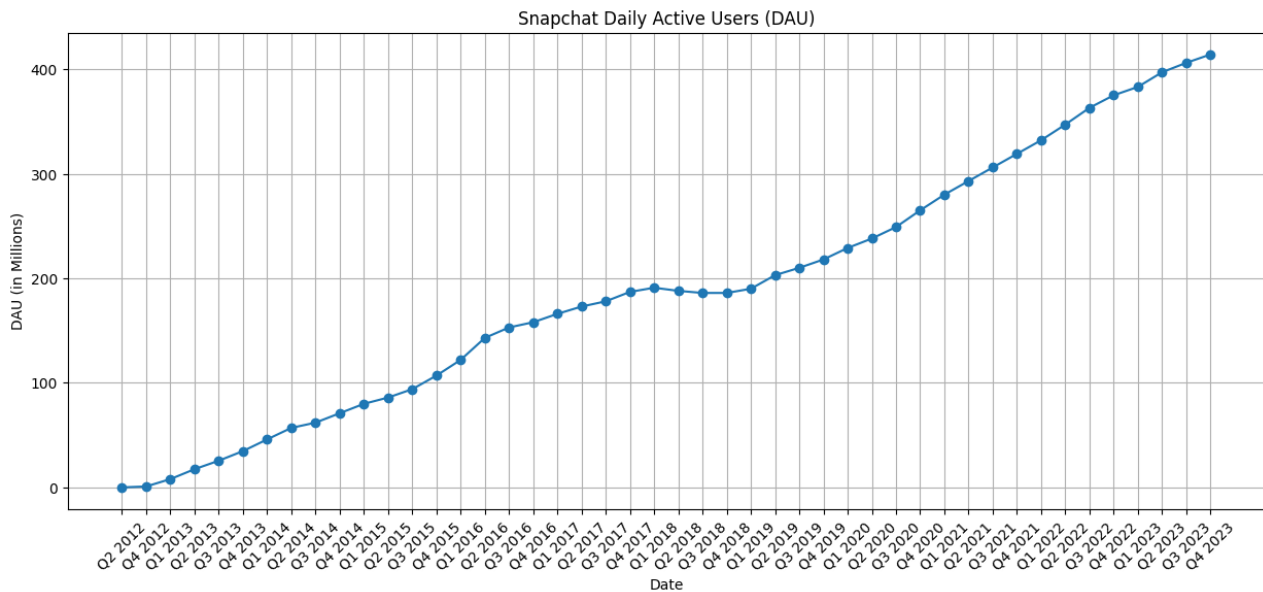
- The data set is already clean and is in correct format without any Null values. So, we can simply move on to the next step in trend analysis.

**Step 3: Visualizing the Data & Trend Identification**

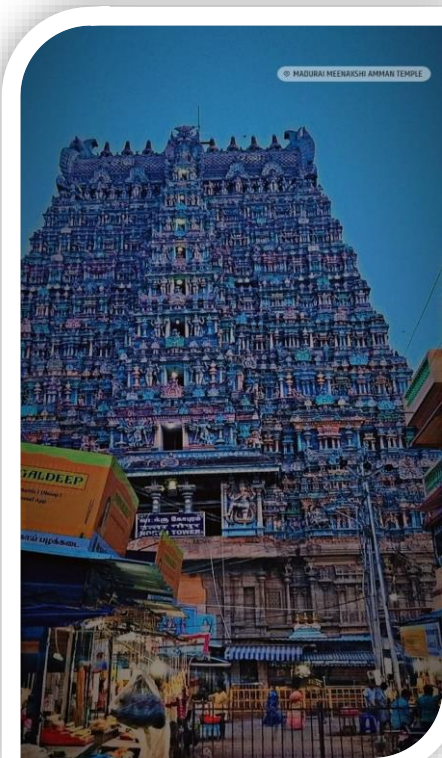
- Let us plot a line chart to figure out trend from past observations.
- Determining the type of trend: increasing, decreasing, or stable.

```
# Plotting the data
plt.figure(figsize=(15, 6))
plt.plot(df['Date'], df['DAU (in Millions)'], marker='o', linestyle='--')
plt.title('Snapchat Daily Active Users (DAU)')
plt.xlabel('Date')
plt.ylabel('DAU (in Millions)')
plt.xticks(rotation=45)
plt.grid(True)
plt.show()
```

**Exploratory Data Analysis**



### Step 4: Regression Analysis

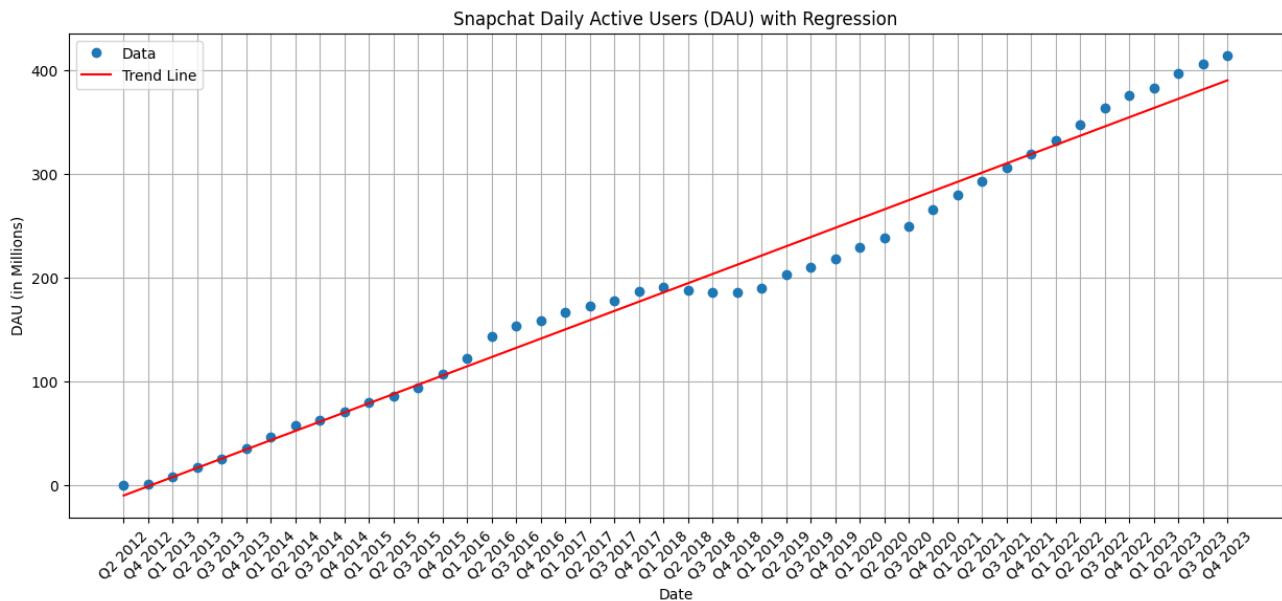


```
# Fitting a polynomial trend line
coef = Polynomial.fit(range(len(df)),
    smoothed_dau, 1)
trend_line = coef.convert().coef

# Plotting the data with the trend line
plt.figure(figsize=(15, 6))
plt.plot(df['Date'], df['DAU (in Millions)'], marker='o', linestyle='',
    label='Data')
plt.plot(df['Date'],
    coef(range(len(df))), linestyle='--',
    color='red', label='Trend Line')
plt.title('Snapchat Daily Active Users (DAU) with Regression')
plt.xlabel('Date')
plt.ylabel('DAU (in Millions)')
plt.xticks(rotation=45)
plt.legend()
plt.grid(True)
plt.show()
```

```
# Display the trend line equation
print(f"Trend Line Equation: DAU = {trend_line[1]:.2f} * Month + {trend_line[0]:.2f}")
```





From the above, we can conclude, the type of trend is increasing year by year with an exception from 2018 to 2021 (Decreasing).

### Step 5: Forecasting

- Using identified trend to make predictions about future values from previous step.

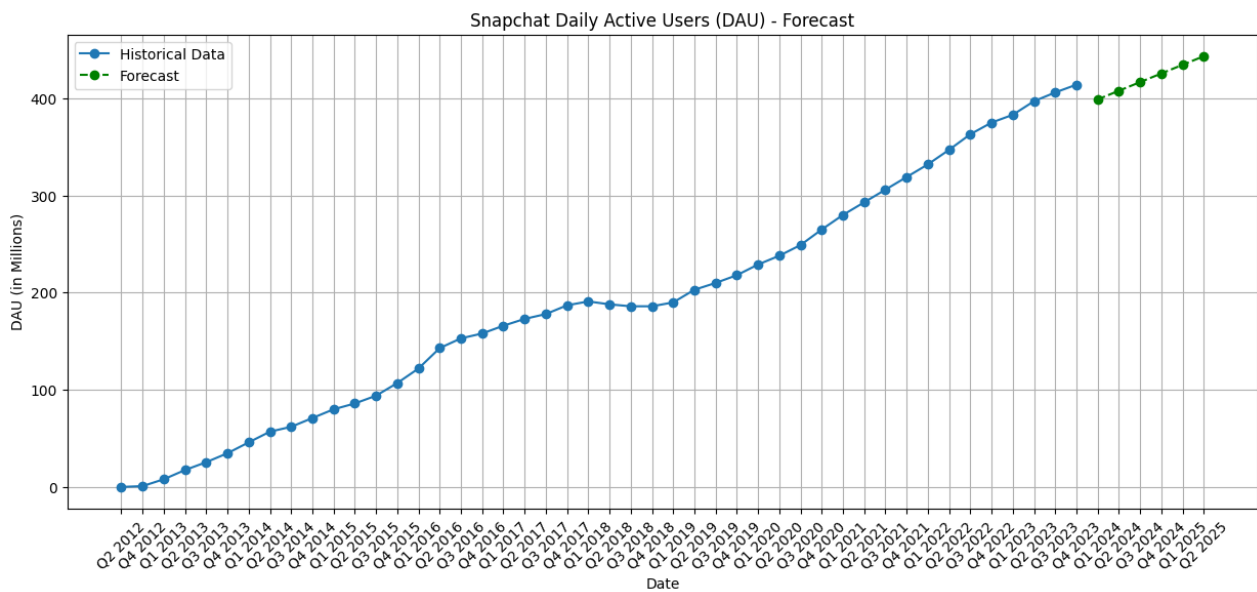
```
# Forecasting the next 6 quarters
forecast_dates = ['Q1 2024', 'Q2 2024',
                  'Q3 2024', 'Q4 2024', 'Q1 2025', 'Q2 2025']
forecast_values = coef(range(len(df),
                             len(df) + 6))

# Plotting the forecast
plt.figure(figsize=(15, 6))
plt.plot(df['Date'], df['DAU (in Millions)'], marker='o', linestyle='-',
         label='Historical Data')
plt.plot(forecast_dates, forecast_values, marker='o', linestyle='--',
         color='green', label='Forecast')
plt.title('Snapchat Daily Active Users (DAU) - Forecast')
plt.xlabel('Date')
plt.ylabel('DAU (in Millions)')
plt.xticks(rotation=45)
plt.legend()
plt.grid(True)
```



```
plt.show()

# Displaying the forecasted values
forecast_df = pd.DataFrame({'Date': forecast_dates, 'Forecasted DAU (in Millions)': forecast_values})
print("\nForecasted DAU for the next 6 quarters:")
print(forecast_df)
```



Forecasted DAU for the next 6 quarters:

	Date	Forecasted DAU (in Millions)
0	Q1 2024	398.867393
1	Q2 2024	407.756475
2	Q3 2024	416.645557
3	Q4 2024	425.534639
4	Q1 2025	434.423721
5	Q2 2025	443.312803

Based on the forecasted DAU (Daily Active Users) for the next 6 quarters, we can draw the following conclusions:

1. **Continued Growth:** The trend indicates that Snapchat's DAU is forecasted to continue to grow steadily over the next 6 quarters, with an increasing trend.



2. **Consistent Growth Rate:** The forecast shows a consistent growth rate, indicating that the platform's user base is expected to expand steadily.
3. **Positive Momentum:** The positive momentum in DAU indicates Snapchat's sustained popularity and user engagement.
4. **Future Projections:** Based on the trend, we can expect Snapchat's DAU to reach approximately 407.76 million by Q2 2024, and 443.31 million by Q2 2025.

### Conclusion:

Snapchat app usage has shown consistent growth over the past few years, with a noticeable increase in user engagement during specific periods, likely due to new feature releases or marketing campaigns. The trend analysis suggests a positive trajectory for Snapchat's user engagement, which can be leveraged for future growth strategies and decision-making.



*The images used in this report are taken using Snapchat and are not intended to blame anyone.*