📊 Meta Ad Performance – SQL Project

This document presents SQL queries used to analyze ad performance across Meta platforms (**Facebook & Instagram**).
It includes KPIs, platform-level performance, engagement metrics, and campaign analysis.
These queries can also be integrated into **Power BI** or **Tableau dashboards** for visualization.

🔑 Section A: Summary KPIs

These queries calculate key performance indicators (KPIs) such as **Impressions**, **Clicks**, **Shares**, **CTR**, **Engagement Rate**, and **Purchase Rate**.

```
SELECT * FROM ad_events;
SELECT * FROM ads;
SELECT * FROM campaigns;
SELECT * FROM users;
```

---

1 Count of Impressions

```
SELECT
    adds.ad_platform AS Platforms,
    COUNT(add_event.event_type) AS Impression_count
FROM ad_events AS add_event
INNER JOIN ads AS adds
    ON add_event.ad_id = adds.ad_id
WHERE add_event.event_type = 'Impression'
GROUP BY adds.ad_platform;
```

---

2 Count of Clicks

```
SELECT
    adds.ad_platform AS Platforms,
    COUNT(add_event.event_type) AS Click_count
FROM ad_events AS add_event
INNER JOIN ads AS adds
    ON add_event.ad_id = adds.ad_id
WHERE add_event.event_type = 'Click'
GROUP BY adds.ad_platform;
```

---

3 Count of Shares

```
SELECT
    adds.ad_platform AS Platforms,
    COUNT(add_event.event_type) AS Share_count
FROM ad_events AS add_event
INNER JOIN ads AS adds
    ON add_event.ad_id = adds.ad_id
WHERE add_event.event_type = 'Share'
GROUP BY adds.ad_platform;
```

---

4 Count of Comments

```
SELECT
    adds.ad_platform AS Platforms,
    COUNT(add_event.event_type) AS Comment_count
FROM ad_events AS add_event
INNER JOIN ads AS adds
    ON add_event.ad_id = adds.ad_id
WHERE add_event.event_type = 'Comment'
GROUP BY adds.ad_platform;
```

---

5 Count of Purchases

```
SELECT
    adds.ad_platform AS Platforms,
    COUNT(add_event.event_type) AS Purchase_count
FROM ad_events AS add_event
INNER JOIN ads AS adds
    ON add_event.ad_id = adds.ad_id
WHERE add_event.event_type = 'Purchase'
GROUP BY adds.ad_platform;
```

---

6 Count of Engagement (Click,Share,Comment)

```
SELECT
  adds.ad_platform as Platforms,
  COUNT(add_event.event_type) AS Engagment_count
FROM
  ad_events AS add_event
INNER JOIN
  ads AS adds
ON
  add_event.ad_id = adds.ad_id
WHERE
  add_event.event_type = 'Click' or
  add_event.event_type = 'Comment' or
  add_event.event_type = 'Share'
GROUP BY
  adds.ad_platform
```

---

7 Click-Through Rate (CTR)

```
SELECT
    a.ad_platform,
    ROUND((SUM(CASE WHEN e.event_type = 'Click' THEN 1 ELSE 0 END) *
100.0) /
          NULLIF(SUM(CASE WHEN e.event_type = 'Impression' THEN 1 ELSE
0 END), 0), 2) AS CTR_Percentage
FROM ad_events e
```

```
JOIN ads a ON e.ad_id = a.ad_id
GROUP BY a.ad_platform
ORDER BY CTR_Percentage DESC;
```

---

8 Engagement Rate

```
SELECT
    a.ad_platform,
    ROUND((SUM(CASE WHEN e.event_type IN ('Click','Share','Comment')
THEN 1 ELSE 0 END) * 100.0) /
          NULLIF(SUM(CASE WHEN e.event_type = 'Impression' THEN 1 ELSE
0 END), 0), 2) AS Engagement_Rate_Percentage
FROM ad_events e
JOIN ads a ON e.ad_id = a.ad_id
GROUP BY a.ad_platform
ORDER BY Engagement_Rate_Percentage DESC;
```

---

9 Conversion Rate

```
 SELECT
    adds.ad_platform,
    SUM(CASE WHEN ad_event.event_type = 'Purchase' THEN 1 ELSE 0 END)
AS Purchase,
    ROUND(
         (SUM(CASE WHEN ad_event.event_type = 'Purchase' THEN 1 ELSE 0
END)
            * 100.0 /
            NULLIF
            (SUM(CASE WHEN ad_event.event_type = 'Click' THEN 1 ELSE 0
END), 0)
         ),
        2
    ) AS Conversion_percentage
FROM ad_events ad_event
JOIN ads adds
    ON ad_event.ad_id = adds.ad_id
GROUP BY adds.ad_platform;
```

---

10 Purchase Rate

```
SELECT
    a.ad_platform,
    ROUND((SUM(CASE WHEN e.event_type = 'Purchase' THEN 1 ELSE 0 END)
* 100.0) /
          NULLIF(SUM(CASE WHEN e.event_type = 'Impression' THEN 1 ELSE
0 END), 0), 2) AS Purchase_Rate_Percentage
FROM ad_events e
JOIN ads a ON e.ad_id = a.ad_id
GROUP BY a.ad_platform
ORDER BY Purchase_Rate_Percentage DESC;
```

---

11 Total Budget

```
select sum(total_budget) as TotalBudget from campaigns
```

---

12 Average Budget

```
select (SUM(total_budget)/ COUNT(total_budget))
      as AvgBudget from campaigns
```