

BI Marketing - Assignment

Part 2: Business and Technical Questions

1. Cohort Analysis

- Cohort analysis is a method of **segmenting users** based on shared characteristics or behaviors over time. For example, install month, install_date, purchase_date.
- CASES:
 1. Marketing campaign performance – because we can measure long-term impact on user acquisition.
 2. Tracking user engagement
 3. Retention rates for analysis – understand why users stay engaged

For example, we can track players that installed the game between 2 periods and measure differences in engagement.

- Some of the possible insights are:
 1. **Retention Trends** – Identifies drop-off points.
 2. **LTV (Lifetime Value) Analysis** – Helps forecast long-term revenue per user.
 3. **Marketing ROI** – Determines which acquisition channels bring high-value users.
 4. **Product Engagement** – Analyzes how long users engage with certain features.

2. ROAS Investigation

ROAS is declining across multiple campaigns, while CPI (Cost Per Install) is stable, and user acquisition volume is increasing.

ROAS Calculation: $\text{Total Revenue from Ad Campaign} / \text{Total Ad Spent}$

CPI: $\text{Total Ad Spent} / \text{Number of Installs}$

User-Level Revenue: Track player spending from different acquisition sources.

Technical Questions

3. Data Warehouse vs. Data Lake

- DWH uses structured data with higher costs for storage, DWH is more suited for analytics solutions and BI Dashboards
- Data Lake is Structured + Semi-structured + Unstructured data types which is suited for Big data processing and AI/ML. high performance and scalable.

4. SQL Left Join Scenarios

- In this scenario we can see that the difference is that the condition is 1 time in the JOIN clause and the other time in the WHERE clause. In this scenario the result is affected by that the condition of the country='spain' but it could be a difference in the result because the preserved table will not be filtered no matter what because of the LEFT JOIN clause which makes the left table preserved table. So the result might be different.