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GO IT

# Product Metrics Analysis

Final Project for the 'Data Analyst' Course, Kateryna Mayatska

# The idea of the project

Create a dashboard for a product manager with the goal of analyzing revenue from the project, tracking its dynamics, and performing high-level analysis of changes.



# Project Data

- For the analysis, data from a SQL database were used: `project.games_payments` and `project.games_paid_users`.
- Domain: gaming
- Period: 2022

# Project Description

Duration: 5 days



Technologies used:  
DBeaver (PostgreSQL),  
Tableau



Applied functionality:

- ▶ The project includes SQL queries for data selection, transformation, and preparation
- ▶ Dashboard for interactive visualization and analysis of metrics



# Metrics for Analysis

- MRR
- New MRR
- Churned MRR
- Returning MRR
- Expansion MRR
- Contraction MRR
- Churned Users Rate
- Churned MRR Rate



- Paid Users
- New paid Users
- Churned Users
- Returnig Users
- LT
- LTV
- ARPPU



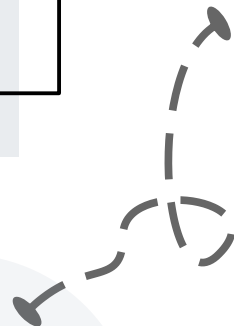
# Challenges Faced

“

Determine which metrics are appropriate and convenient to calculate in SQL, and which should be aggregated and calculated directly in Tableau.

- Decide which indicators to group together and which data to display on the dashboard so that it is not overloaded, yet remains as informative as possible.
- Verify data completeness in visualizations. During the first attempt to build the MRR components chart, it was noticed that the data were incomplete and did not provide a full picture because revenue from returning users was

”





# Proposed Solutions



It was decided that aggregations and ratio calculations would be performed in Tableau, as this ensures correct results display when using interactive filters.

- For a deeper analysis of the relationship between key metrics and their impact on management decisions and project profitability, additional informational resources were used.
- To form a complete picture of revenue dynamics and user activity, the metrics Returning MRR and Returning Users were added.



# Project Stages

01

- Familiarization with the available data and determination of which data transformations are necessary for further visualization, as well as which metrics are appropriate to calculate using SQL queries.

02

- Writing the SQL-[Query](#). The query was implemented as a CTE using window functions. The following metrics were calculated: MRR, New MRR, New Paid Users, Churned MRR, Churned Users, Expansion MRR, Contraction MRR, Returning MRR, Returning Users.

03

- The resulting file with transformed and prepared data is loaded into Tableau for visualization.

04

- Calculation in Tableau of the remaining metrics: ARPPU, LT, LTV, Paid Users, Churned Users Rate, Churned MRR Rate. Visualization of the results on the [dashboard](#) with added filters for month, user age, and user language.

# SQL - query

```
WITH monthly_revenue AS(
SELECT user_id
, date(date_trunc('month', payment_date)) AS payment_month
, sum(revenue_amount_usd) AS total_revenue
FROM project.games_payments AS gp
GROUP BY payment_month, user_id
),
staging_data AS (
SELECT *
, LAG(payment_month) OVER (PARTITION BY user_id ORDER BY payment_month) AS
previous_paid_month
, LEAD(payment_month) OVER (PARTITION BY user_id ORDER BY payment_month) AS
next_paid_month
, DATE(payment_month + INTERVAL '1' month) AS next_calendar_month
, DATE(payment_month - INTERVAL '1' month) AS previous_calendar_month
, LAG(total_revenue) OVER (PARTITION BY user_id ORDER BY payment_month) AS
previous_total_revenue
FROM monthly_revenue
),
-- New MRR, New Paid Users, Churned MRR, Churned Users, Expansion MRR, Contraction MRR, Back_from_churned MRR,
Back_from_churned Users
revenue_metrics AS (
SELECT *
CASE
WHEN previous_paid_month IS NULL
THEN total_revenue
END AS new_MRR
CASE
WHEN previous_paid_month IS NULL
THEN 1
END AS new_paid_users
CASE
WHEN next_paid_month IS NULL OR next_paid_month != next_calendar_month
THEN total_revenue
END AS churned_MRR
CASE
WHEN next_paid_month IS NULL OR next_paid_month != next_calendar_month
THEN 1
END AS churned_users
```

```

CASE
WHEN previous_calendar_month = previous_paid_month AND total_revenue >
previous_total_revenue
THEN total_revenue - previous_total_revenue
END AS expansion_MRR
CASE
WHEN previous_calendar_month = previous_paid_month AND total_revenue <
previous_total_revenue
THEN total_revenue - previous_total_revenue
END AS contraction_MRR
CASE
WHEN previous_paid_month != previous_calendar_month AND previous_paid_month IS NOT
NULL
THEN total_revenue
END AS back_from_churn_mrr
CASE
WHEN previous_paid_month != previous_calendar_month AND previous_paid_month IS NOT
NULL
THEN 1
END AS back_from_churn_users
FROM staging_data
)
SELECT *
FROM revenue_metrics
LEFT JOIN project.games_paid_users USING (user_id)
ORDER BY payment_month;
```

## REVENUE METRICS

Language

(All)

Age groups

(All)

Month of payment

(All)

MRR Composition



New, Returning & Lost Users



Paid Users and Revenue Growth



ARPPU & Paying Users Trends



Customer Value Drivers (LT, ARPPU → LTV)



Churned Users Rate and Churned MRR Rate



# Conclusions

- 1) The dashboard allows the manager to immediately see all key metrics and their interrelationships. Using analytics tools made it possible to identify patterns and critical points:
  - The business model is extensive, so acquiring new clients and retaining existing ones is critically important.
  - Customer churn remains fairly high (over 20%), which is significant even for the gaming industry. The highest risk is observed among users under 30 years old, where churn shows an increasing trend. The 30+ segment demonstrates a wave-like dynamic. This indicates the need for a separate analysis of factors affecting the choices of different age groups to improve retention.
  - Overall, the model is profitable, except for one month, which requires a deeper assessment of the factors that led to this outcome.
  - Since users are currently not ready to increase their average spend, it is recommended to focus on analyzing their needs and finding creative solutions to increase the product's value.
- 2) The project demonstrated that a systematic approach to collecting, visualizing, and interpreting product metrics is an effective tool for decision-making, enabling improved business process performance and identifying pathways for development.



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Thank you for your atten

