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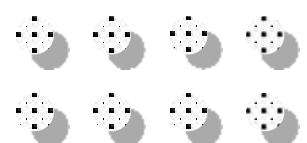


# Product Metrics Analysis

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

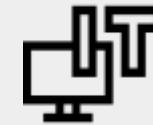


Technologies used:  
DBeaver (PostgreSQL),  
Tableau



Applied functionality:

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

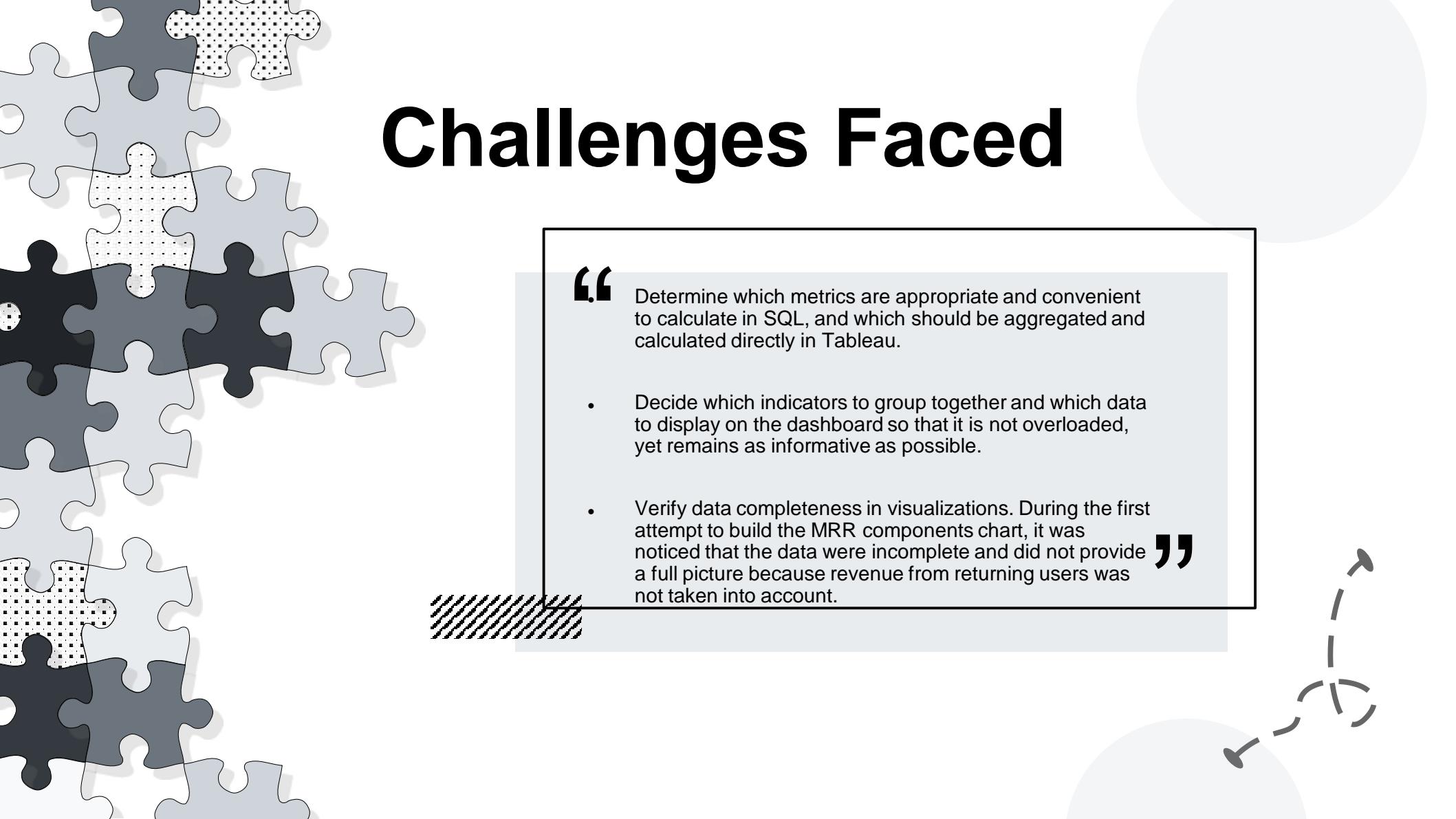


# Metrics for Analysis

- 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



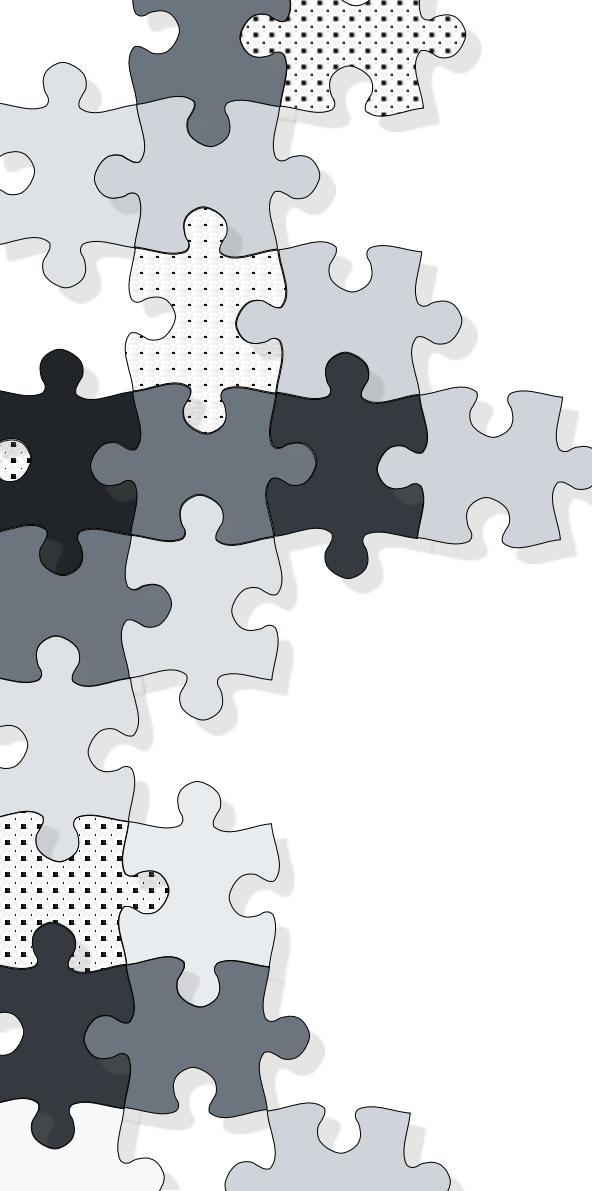
# Challenges Faced

“

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 not taken into account.

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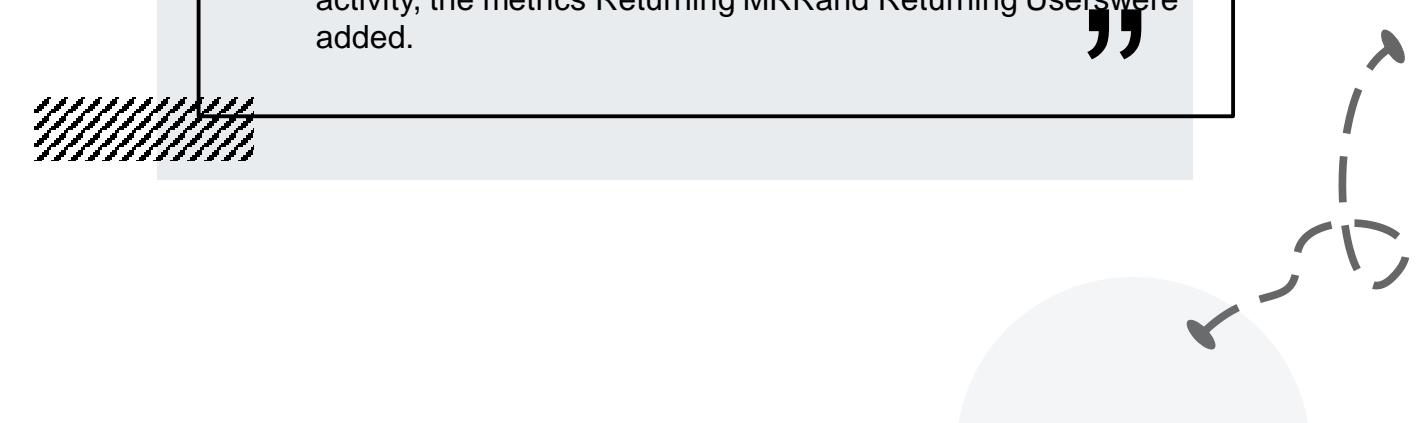


# Proposed Solutions

“ 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.

03

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

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.

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_churnd MRR,
Back_from_churnd 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
FROM staging_data
)
SELECT *
  , 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_chum_mrr
  , CASE
      WHEN previous_paid_month != previous_calendar_month AND previous_paid_month IS NOT
NULL
      THEN 1
    END AS back_from_chum_users
FROM revenue_metrics
LEFT JOIN project.games_paid_users USING (user_id)
ORDER BY payment_month;
```

# REVENUE METRICS

Language

(All)

Age groups

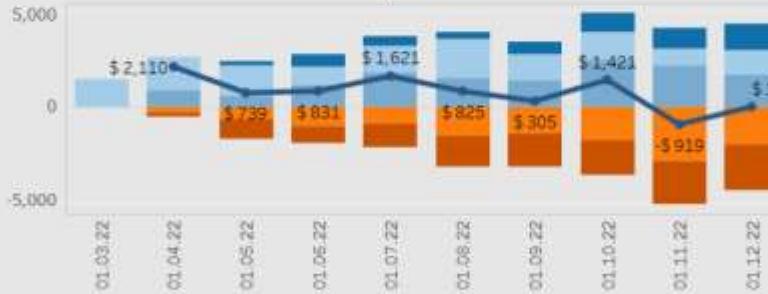
(All)

Month of payment

(All)

MRR Composition

Revenue, \$



New, Returning &amp; Lost Users

Number of users



Paid Users and Revenue Growth

Revenue, \$



ARPPU &amp; Paying Users Trends

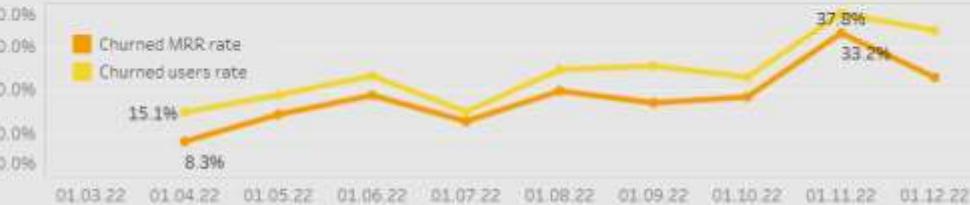


Customer Value Drivers (LT, ARPPU → LTV)

ARPPU, \$



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.



A big thank you to the instructors for the structured presentation of the material and to the mentor for guidance throughout all stages of the course and the final project.

Thank you for your atte

