📊 *Customer Churn & Retention Analysis*

(SQL | MySQL)

📌 Project Overview

This project analyzes customer churn behavior using SQL to identify high-risk customer segments, understand retention drivers, and support data-driven retention strategies.

The analysis simulates a real subscription-based business environment where customer lifecycle, transaction activity, and support interactions influence churn decisions.

The project demonstrates how SQL can be used not only for data extraction but also for business intelligence, customer segmentation, and churn risk identification.

🎯 Business Objectives

- ★ Measure overall churn rate and customer retention performance
- ★ Identify customer segments with higher churn risk
- ★ Analyze revenue impact of customer churn
- ★ Detect early warning signals before churn occurs
- ★ Provide actionable retention strategies for business stakeholders

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📑 Dataset Description

The project uses four relational tables:

👤 Customers Table :

Column	Description

customer_id	Unique customer identifier
signup_date	Customer onboarding date
gender	Customer demographic attribute
age	Customer age
region	Customer geographic location
plan_type	Subscription plan category

📄 Subscriptions Table :

Column	Description
subscription_id	Unique subscription record
customer_id	Linked customer
start_date	Subscription start date
end_date	Subscription end date
churn_flag	1 = churned, 0 = active
churn_reason	Reason for churn

🟨 Transactions Table :

Column	Description
transaction_id	Transaction record
customer_id	Linked customer
transaction_date	Purchase date
amount	Transaction value
payment_mode	Payment method

🎧 **Support Tickets Table :**

Column	Description
ticket_id	Support interaction record
customer_id	Linked customer
ticket_date	Support contact date
issue_type	Type of customer issue
resolution_days	Time taken to resolve issue

🔍 Analysis Workflow

🧭 Step 1: Business Understanding & Data Exploration

- ❖ Understand customer lifecycle structure
- ❖ Validate table relationships and data consistency
- ❖ Explore dataset size, structure, and coverage

📊 Step 2: Churn KPI & Baseline Metrics

Key Questions:

- ❖ What percentage of customers churned?
- ❖ What percentage of customers remain active?
- ❖ How long do customers typically stay before churn?

Key Insights:

- ❖ Established baseline churn rate
- ❖ Measured customer lifetime duration
- ❖ Built churn performance benchmarks

📉 Step 3: Customer Behavior & Revenue Analysis

Key Questions:

- ❖ Do churned customers generate less revenue?
- ❖ Does transaction frequency impact churn?
- ❖ Does payment behavior correlate with retention?

Key Insights:

- ❖ Identified revenue differences between churned vs retained customers
- ❖ Discovered behavioral patterns impacting retention
- ❖ Highlighted payment mode preferences

⚠️ Step 4: Customer Support & Experience Impact

Key Questions:

- ❖ Do support tickets increase churn risk?
- ❖ Does slow issue resolution drive customer loss?

Key Insights:

- ❖ Higher support interaction frequency linked with churn
- ❖ Long resolution times increased churn probability
- ❖ Support experience plays a major role in retention

🚨 Step 5: Churn Risk Indicators & Early Warning Signals

Risk signals identified:

- ❖ Low transaction frequency
- ❖ Reduced customer spending
- ❖ Frequent support tickets
- ❖ Long ticket resolution time
- ❖ Short customer tenure

This step simulates proactive churn prediction signals used by real businesses.

🎯 Step 6: Retention Strategy & Customer Segmentation

Customers segmented into:

- ❖ High-Value Customers
- ❖ Medium-Value Customers
- ❖ Low-Value Customers
- ❖ At-Risk Customers

Segmentation helps prioritize retention budgets and marketing strategies.

🧠 Step 7: Advanced Business Insights

Combined analysis across:

- ❖ Customer lifetime value
- ❖ Support behavior
- ❖ Subscription tenure
- ❖ Revenue patterns

This step provides multi-dimensional churn intelligence.

📊 Key Findings

- ★ Customers with frequent support issues show significantly higher churn rates
- ★ High-value customers still churn when service experience is poor
- ★ Short tenure customers are more likely to churn
- ★ Payment behavior impacts customer retention patterns
- ★ Transaction inactivity is a strong early churn indicator

💼 Business Recommendations

🎯 Proactive Retention Monitoring

- ❖ Develop early warning dashboards tracking:
- ❖ Transaction frequency drop
- ❖ Increased support activity
- ❖ Spending decline

🤝 Customer Experience Improvements

- ❖ Reduce support ticket resolution time
- ❖ Improve onboarding for new customers

❖ Provide faster escalation for high-value users

💰 Revenue Protection Strategy

❖ Focus retention efforts on high-value churn risk customers
❖ Offer loyalty benefits and renewal incentives

📣 Targeted Engagement Campaigns

❖ Personalized retention campaigns for at-risk segments
❖ Automated alerts for inactivity detection

🛠️ SQL Concepts Used

★ Joins (INNER JOIN)
★ Aggregations (SUM, AVG, COUNT)
★ Conditional Logic (CASE WHEN)
★ Grouping & Segmentation
★ Subqueries
★ Churn KPI calculations
★ Customer lifetime calculations
★ Business metric derivation

📈 Project Skills Demonstrated

★ Business problem solving using SQL
★ Customer lifecycle analysis
★ Retention strategy design
★ Data quality validation
★ KPI development and interpretation
★ Translating data into business insights

🚀 Business Impact

This project demonstrates how SQL can be used to:

- ★ Identify churn drivers
- ★ Support retention strategy design
- ★ Improve customer lifetime value
- ★ Enable proactive business decision-making

🧾 Tools Used

- ★ MySQL Workbench
- ★ SQL
- ★ Relational Database Design

👦🏻 Author

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