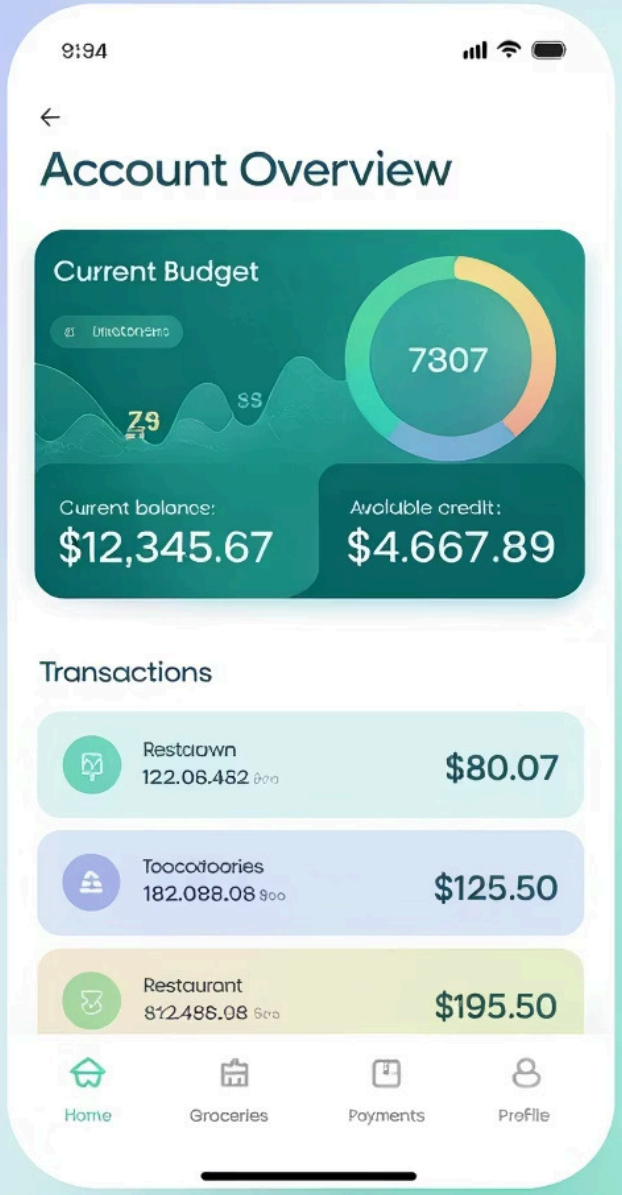
SQL Case Study: Insights for a Growing Fintech Institution

Currency Risk • Customer Behaviour • Complaint Management

Brume Pascal | PostgreSQL | July 2025



Business Needs

Why This Analysis Was Needed

- The stakeholders needed to know **which transaction channels generate the most fees**, especially in multiple currencies.
- There was **no structured tracking of complaints** across products or regions.
- No updated data-driven view existed for **customer behaviour by gender, product, or geography**.
- **Foreign currency usage** was growing, but unmonitored by account type.
- **Dormant customers** with active accounts were not being identified or re-engaged.

Project Overview

What This Project Covers

This case study analyzes the operations of a fictional microfinance institution using SQL. It extracts actionable insights to improve revenue generation, service performance, and customer engagement.

Fee revenue by transaction channel

Currency risk in foreign transactions

Complaint handling trends

Customer behaviour across segments

Silent account detection

Tech Stack: PostgreSQL

Database Design

Tables and Relationships simulated

customers

Customer ID, name, account type, product, location

transactions

Multi-channel logs with currency, amount, type, and date

channel_metadata

Channel type and fees per transaction

support_tickets

Complaint records with resolution time

currency_rates

Live exchange rates to convert all values to Naira

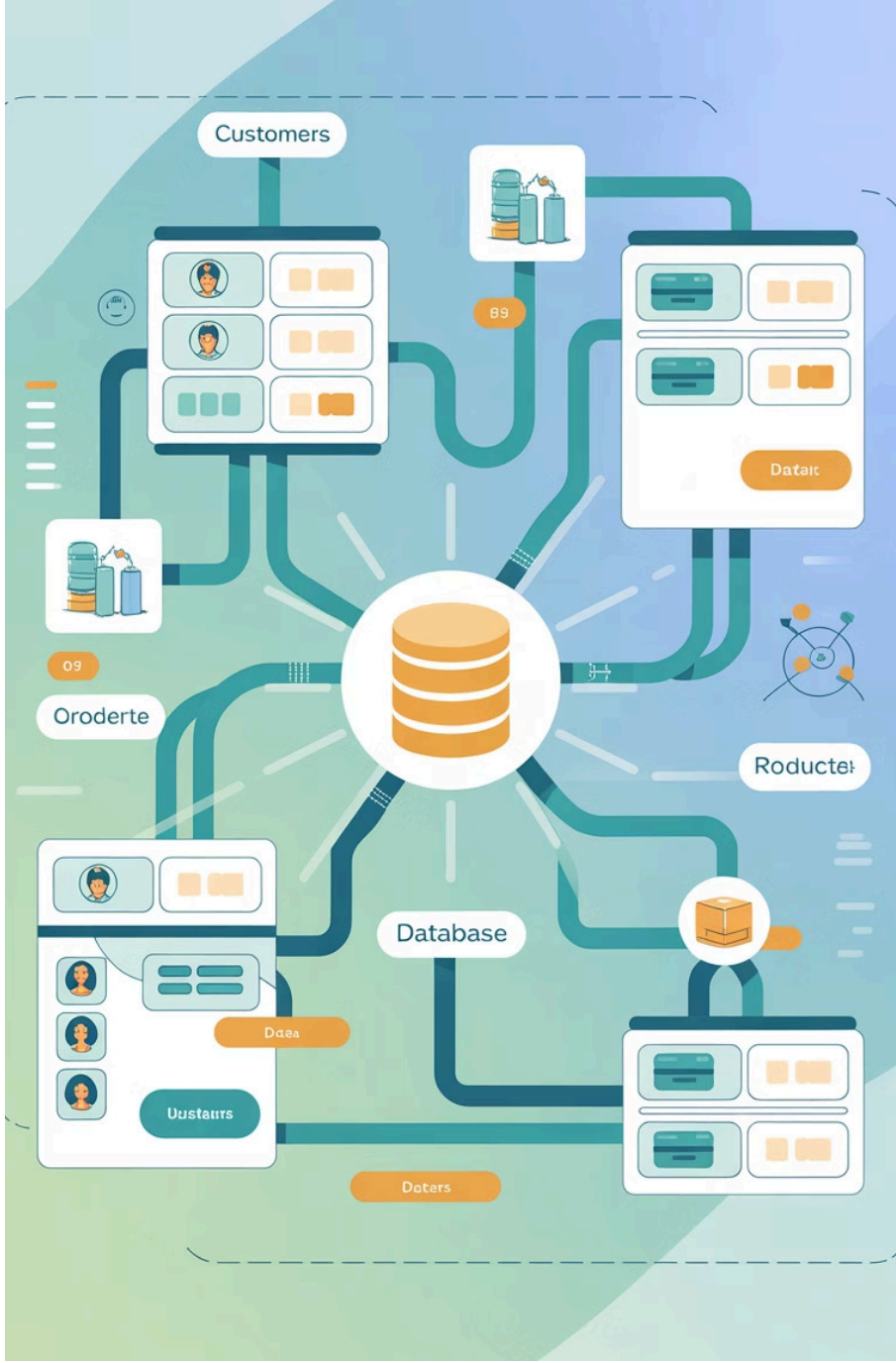
Relationships:

transactions.customer_id → customers.customer_id

transactions.channels → channel_metadata.channel_name

transactions.currency → currency_rates.currency

support_tickets.customer_id → customers.customer_id



What I Did

Step-by-Step Process

1. Design & Simulation

Designed schema and simulated data across 5 interlinked tables

2. Data Loading

Loaded the data into PostgreSQL

3. Query Development

Wrote **8 stakeholder-driven SQL queries**

4. Advanced Techniques

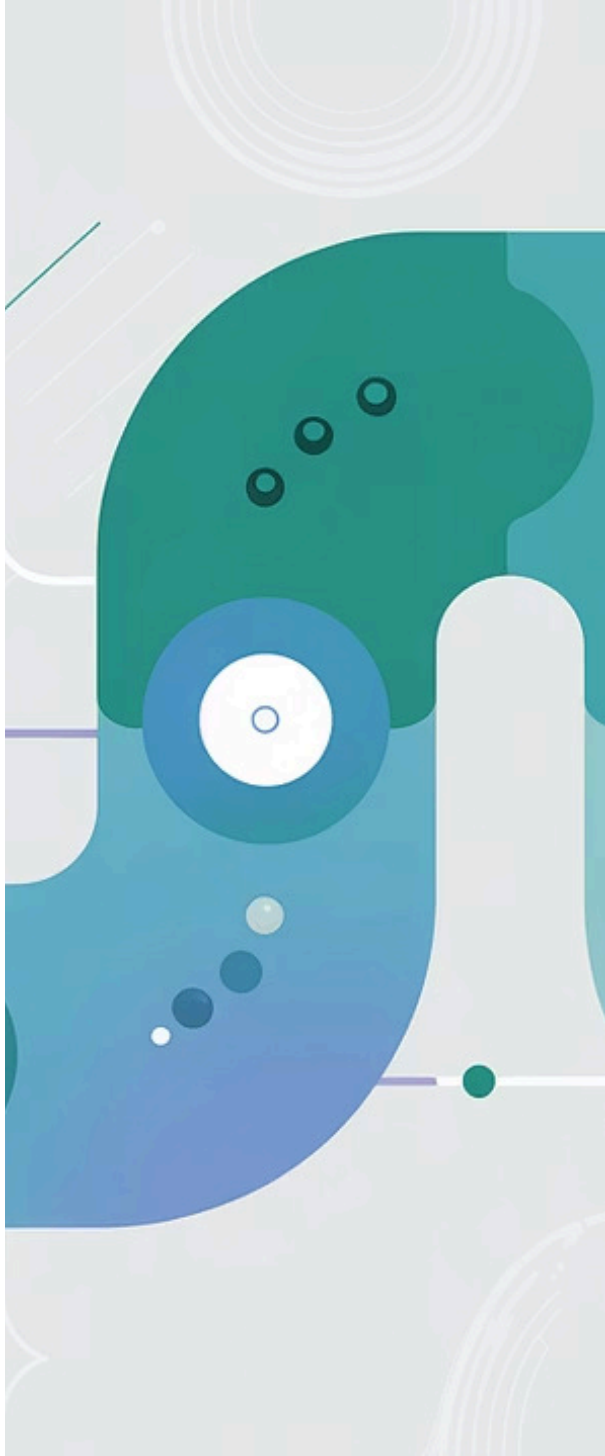
Used **joins**, **CTEs**, **subqueries**, **window functions**, and **interval-based filters**

5. Currency Normalization

Normalized fee and transaction amounts using **live currency rates**

6. Insight Extraction

Extracted insights and transformed them into business recommendations



Q1 — Channel Fee Profitability

Question:

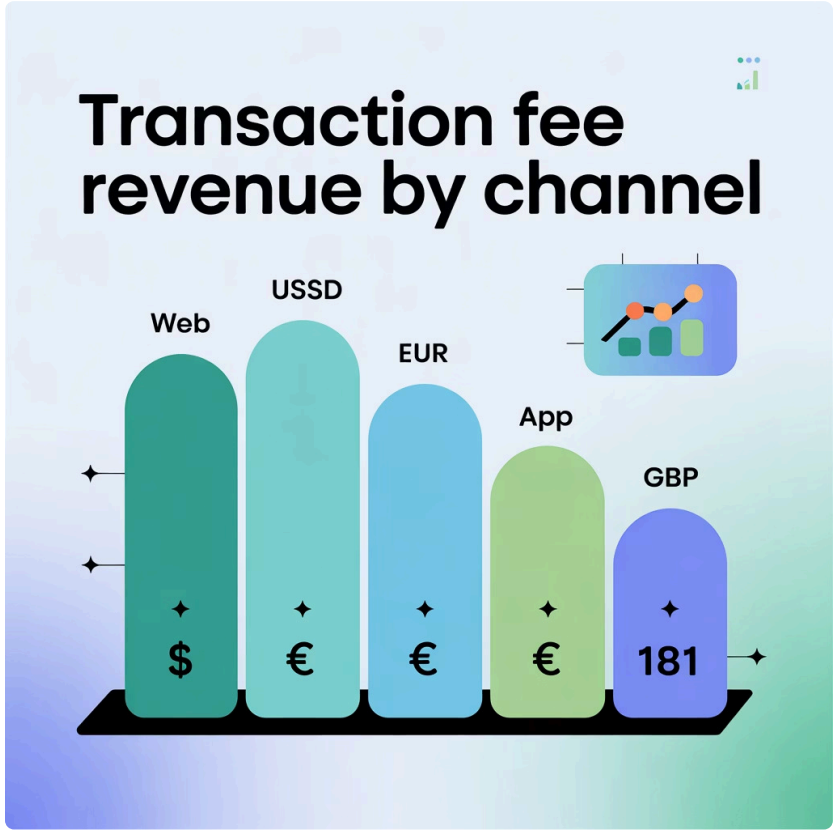
Which channel generates the most transaction fee revenue (Naira equivalent), and how does it break down by currency?

Insights:

- Web generated the highest total revenue (₦84.3M), led by Pounds and Euros
- USSD followed closely (₦75.8M), strong in mobile FX use
- Apps generated the lowest revenue (₦34.3M), despite usage
- Currency normalization was crucial for comparing values

Recommendation:

Prioritize Web and USSD optimization. Revisit App fee structure.



Q2 — Top Debit Customers (12 Months)

Question:

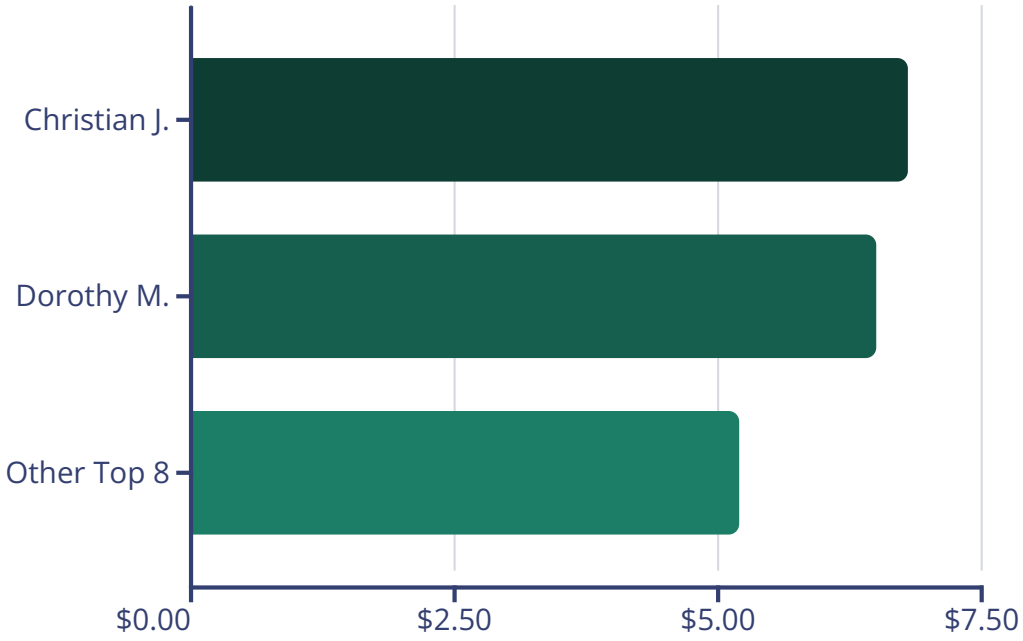
Who are the top 10 customers by total debit transaction amount in the past 12 months?

Insights:

- Top customers held Pounds or Euros
- Most top customers were using **BetterSave** or **SaveEasy** on Savings accounts

Recommendation:

Target high-value customers with premium offers or loyalty programs.



Q3 — Channel Preference by Gender

Question:

How do male and female customers differ in their use of digital vs physical channels?

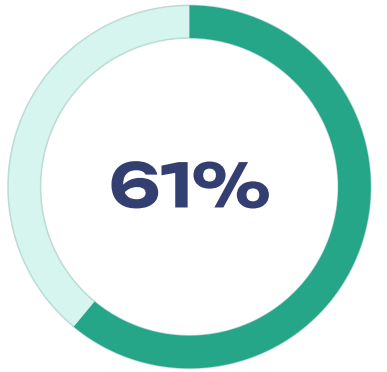
Insights:

- Digital usage is almost identical for both genders: ~60%
- Females made slightly more digital transactions
- No major gender bias in channel preferences

Recommendation:

Design inclusive digital experiences , both genders engage equally.

Male Digital Usage



Female Digital Usage

Q4 — Complaint Density by Segment

Question:

Which product-region combinations have the highest complaints per customer?

Insights:

- **BetterSave in Lagos**: 3.57 complaints/customer which is the highest
- **FamFriends** ranked high across multiple states (Kano, Abuja, Osun)
- **FlexMore** complaints were concentrated in Kaduna and Kano

Recommendation:

Investigate product performance in high-complaint zones.
Improve customer support or product quality.

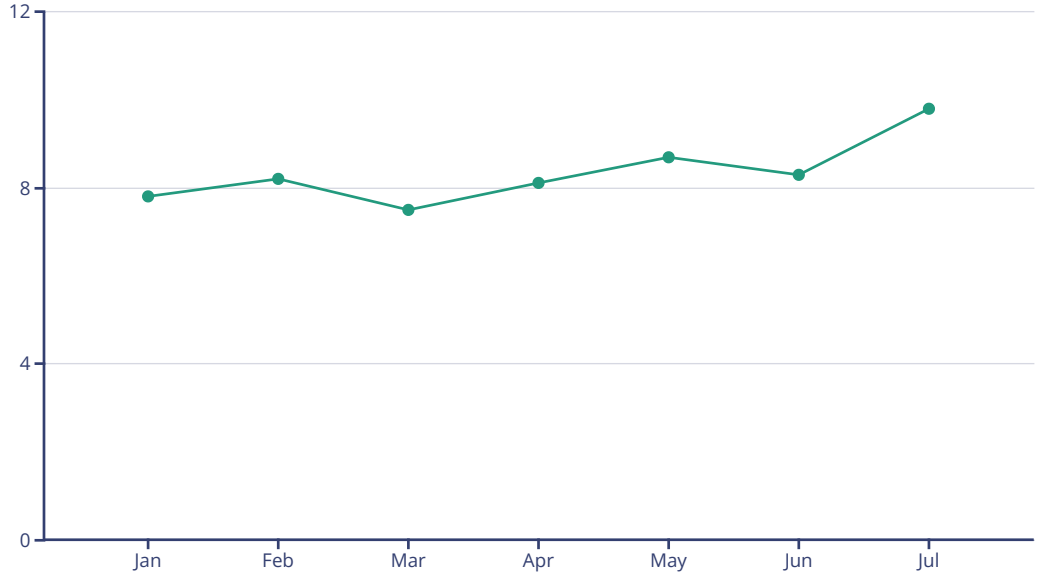
Q5 — Monthly Resolution Time Trend

Question:

What is the average complaint resolution time each month in the past year?

Insights:

- Most months had resolution times between 7.5–8.7 days
- **July 2025** had the worst time (9.78 days), though with fewer tickets
- No sustained downward trend, the performance is inconsistent



Recommendation:

Introduce KPIs for complaint resolution and audit July's spike.

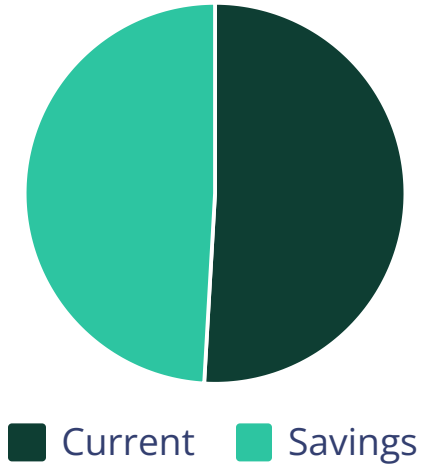
Q6 — FX Risk by Account Type

Question:

What percentage of foreign currency debits came from each account type?

Insights:

- **Current accounts**: 50.91% of FX debits
- **Savings accounts**: 49.09%
- Risk exposure is nearly equal across account types



Recommendation:

Implement uniform FX controls across all account types (limits, alerts, tiering).

Q7 — Silent Customers

Question:

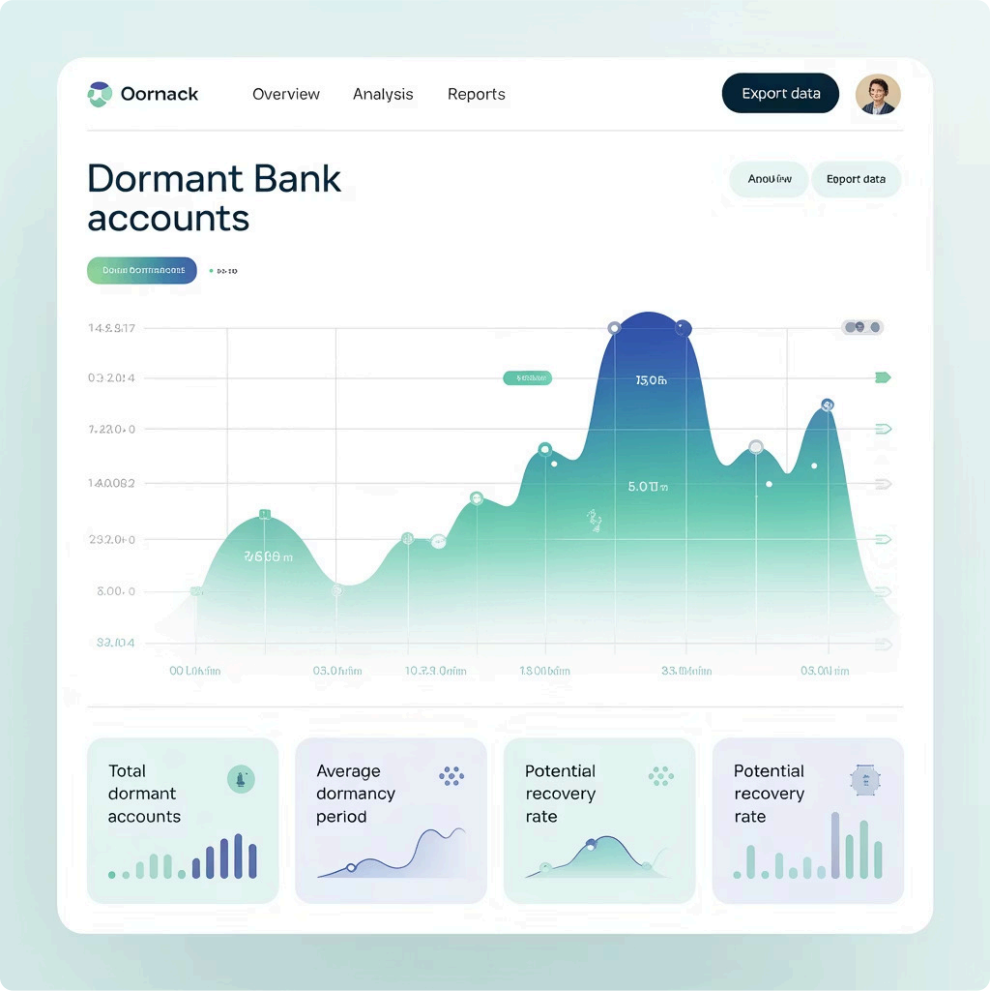
Which customers haven't transacted in the last 12 months but still have active accounts?

Insights:

- Multiple customers have remained inactive since account creation
- Opportunity to engage or offboard dormant customers

Recommendation:

- Create reactivation campaigns using SMS/email.
- Review account dormancy policy.



Q8 — Complaints vs Transactions

Question:

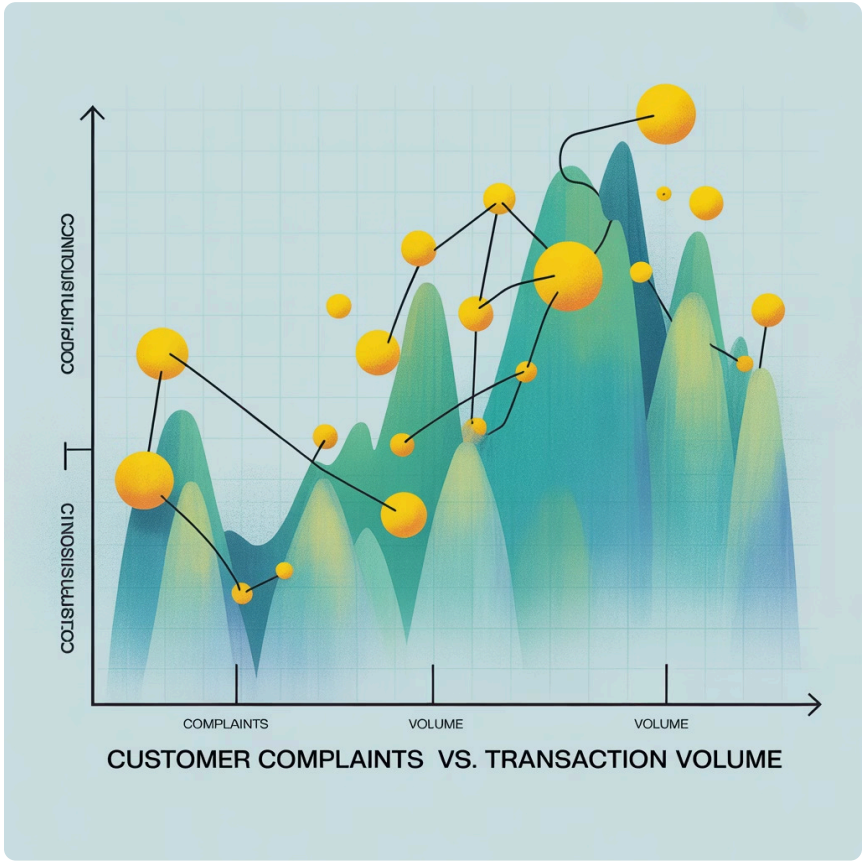
Are customers with the most complaints also the ones with the highest number of transactions?

Insights:

- **No strong correlation** here. The top complaint makers had **very few transactions**
- E.g., Karen Wheeler ranked #1 in complaints but #591 in transaction volume
- This may suggests frustration or onboarding issues over frequent usage

Recommendation:

Audit onboarding UX, customer education, and initial product experience.



Summary Insights

What Did We Learn?

Web and USSD channels are generating the most revenue, they're clearly the bank's strongest assets.

Foreign currency exposure is nearly the same for both Savings and Current accounts , thus FX risk isn't tied to account type.

Digital platforms are used equally by men and women, showing that the bank's digital strategy is inclusive and balanced.

Lagos stands out with the highest number of complaints, especially for specific products, hence, this is a service delivery red flag.

Support performance has been inconsistent month to month, with a worrying spike in July's resolution time.

A number of **customers are active but not transacting**, they might be slipping away quietly.

And finally, **more complaints don't always mean more transactions** , frustration might come from poor experiences, not high usage.

Strategic Recommendations

What Should we Do Next?

Channel Optimization

Double down on Web and USSD : improve the infrastructure and optimize fees where possible.

FX Risk Management

Introduce foreign currency alerts or limits for all account types to better manage FX risk.

Support Enhancement

Reinforce customer support teams, especially in Lagos, and dig deeper into regional complaint trends.

Product Experience

Review user experience for high-complaint products like FamFriends, it may not be about volume, but usability.

Customer Re-engagement

Re-engage silent customers with tailored outreach or incentives ; don't let them go cold.

Performance Tracking

Track monthly KPIs for complaint resolution and transaction activity to catch issues early and improve service delivery.

🙌 Thank You!

> Data tells a story. SQL helps us listen.

Project Details

Project: SQL Case Study for a Growing Financial Institution

Prepared by: Brume Pascal

Technical Information

Tools Used: PostgreSQL, SQL

Date: July 2025

Let's connect:

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GitHub: https://github.com/bopitien?tab=repositories

SQL Queries: https://github.com/bopitien/SQL-Case-Study-Multi-Channel-Banking-Analysis/blob/main/Sql/query.sql