

DVA CAPSTONE PROJECT

OPTIMIZING FINANCIAL OPERATIONS

TEAM MEMBERS (SECTION C: G-12)

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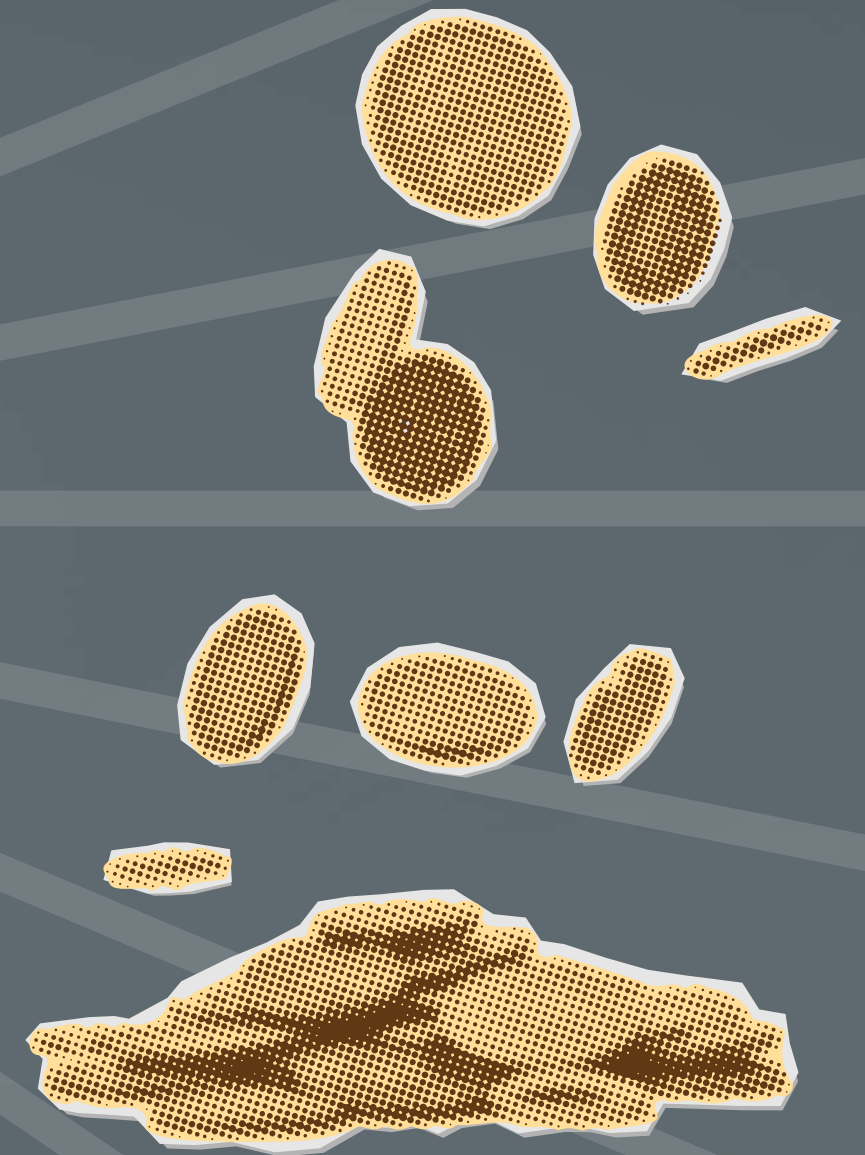
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PROBLEM

Financial organizations process high-volume transaction data containing inconsistencies, missing values, and invalid entries. "Dirty" transaction data obscures true revenue performance and operational bottlenecks across products, customers, and channels. Objective: Build a cleaned dataset and interactive dashboard revealing revenue drivers, failure patterns, and actionable growth opportunities



SOLUTION

Our objective is to build a robust data pipeline and decision-focused dashboard that reliably computes core financial KPIs, clearly identifies a high-value VIP customer segment, and highlights where transaction failures and data issues are hurting revenue.”



DATA ENGINEERING



Analyzed 90k financial transactions (cleaned from 100k raw) to reduce revenue leakage. Built Google Sheets pipeline standardizing products ("Tab"→"Tablet"), payments ("pay pal"→"Pay Pal"), fixing invalid dates/prices. Key KPIs: Revenue, AOV, Success Rate%. Insights: Tablets/Headphones drive revenue; Credit Card/Pay Pal dominate but vary in failures; Fridays/weekends peak.

VIP segment (> \$1K spend) generates disproportionate revenue but faces high failure risk. Dashboard offers Executive KPIs + slicers (Year/Product/Status).

Recommendations: VIP recovery campaigns, payment standardization, targeted marketing. Impact: 5% failure reduction recovers significant revenue, saves 10+ hours/week reporting. Future: Predictive churn modeling.

KPI & METRICS FRAMEWORK



Three Core Financial KPIs

Total Revenue (Completed), Average Order Value (AOV), and Transaction Success Rate % link operations to financial outcomes. These metrics capture realized value, typical ticket size, and operational reliability while quantifying revenue leakage from failed transactions.



Multi-Dimensional KPI Slicing

KPIs sliced by Customer Segment (VIP/Standard), Product, Payment Method, and Time (Month_Year, Day_of_Week). Enables granular analysis of revenue drivers and failure patterns across customers, channels, products, and temporal dimensions simultaneously.



Decision-Focused Dashboard Design

Dashboard charts answer: 'Where's revenue coming from?' and 'Where are we losing it?' This structure transforms descriptive reporting into actionable insights about high-performers and operational failure points by segment, product, and time.

KEY INSIGHTS (EDA)



Top Product Revenue Drivers

Tablets and Headphones consistently emerge as top revenue drivers, contributing a significant share of total completed revenue across multiple months. Tablets demonstrate stable performance rather than seasonal spikes, making them ideal targets for pricing, bundling, and inventory optimization with outsized financial impact.



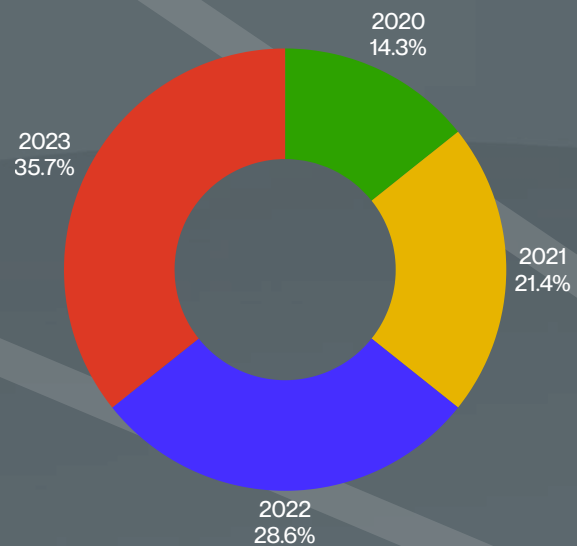
Payment Method Reliability Gaps

Credit Card and PayPal dominate transaction volume and revenue generation. However, failure and pending rates vary significantly across methods, with certain payment gateways showing higher proportions of Failed or Unknown statuses that indicate technical or process issues requiring targeted interventions.



Time Patterns for Operations

Revenue shows clear monthly peaks and troughs suggesting seasonality or campaign effects. Day-of-week analysis reveals Fridays and weekends generate higher transaction volumes and revenue per day, providing actionable insights for capacity planning, campaign timing, and targeted support staffing decisions.



ADVANCED ANALYSIS



VIP Revenue Concentration

VIP customers, defined as those with lifetime spend exceeding \$1,000, account for a disproportionately high percentage of total revenue while representing a smaller share of total transaction volume. This concentration makes them critical for business sustainability and revenue forecasting.



VIP Transaction Risk Exposure

Despite their high value, VIP transactions exhibit significant failure rates across Pending, Failed, and Unknown statuses, exposing these premium customers to poor service experiences that risk revenue leakage and potential customer churn.



Operational Priority Target

The combination of VIP revenue concentration and elevated failure rates creates the highest financial stakes for operational improvements. Prioritizing transaction reliability for this segment delivers maximum ROI on process optimization investments.

DASHBOARD WALKTHROUGH

Executive View

The top panel presents high-level KPIs: Total Revenue, AOV, Transaction Success Rate, VIP Revenue Share, and Weekend Revenue Share.

These KPIs update dynamically with filters, enabling a CXO to see how performance shifts by Year, Product Category, or Customer Segment.

A trend chart shows revenue over time, helping leadership quickly spot growth, decline, or seasonality.

Operational View

The operational section provides transaction-level drill-downs via pivot tables and charts.

We have slicers for Year, Product_Name, Payment_Method, and Transaction_Status, so managers can slice performance in real-time during reviews.

Cross-tab views, such as Day_of_Week vs Payment_Method, help operations teams pinpoint when and where failures cluster, and which channels are underperforming.

RECOMMENDATIONS

Recommendations for Revenue Recovery & Growth

Launch targeted campaigns for VIP customers with Failed/Pending transactions via outreach, retries, and credits to recover high-value revenue. Standardize payment error codes and implement monthly reviews using our Transaction Success Rate dashboard to eliminate technical failures. Focus promotions on top products (Tablets, Headphones) during peak revenue months to maximize AOV and align spend with proven drivers.



IMPACT & VALUE

Financial Impact

Even a modest 5% reduction in failed or unknown transactions, focused primarily on VIP customers and high-value products, would translate into a meaningful recovery in annual revenue

Using our current AOV and weekly failure volume as a baseline, this can be quantified and tracked in the dashboard as a dedicated 'Recovered Revenue' metric.

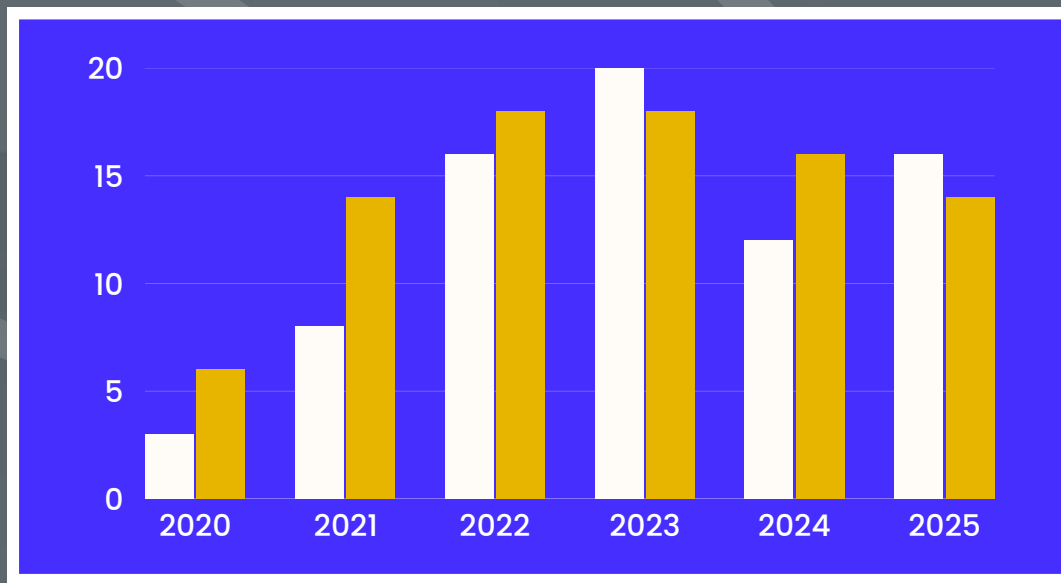
Concentrating promotional spend on top-performing products (e.g., Tablets, Headphones) during peak revenue months could deliver a 20–30% uplift in AOV, as evidenced by our cross-tab analysis of product-month performance.

Operational Efficiency & Decision Quality

The automated cleaning and KPI pipeline we have built consolidates messy exports into a single, reliable source of truth.

This has the potential to save 10+ hours per week that would otherwise be spent on manual Excel cleaning and ad-hoc reporting

More importantly, managers can now self-serve insights using filters and slicers, improving the speed and quality of decisions across finance and operations teams.



LIMITATIONS & NEXT STEPS

Limitations

- "The dataset lacks customer demographics (age, location, acquisition channel), preventing geographic or cohort-based segmentation."
- "No cost or margin data is available, so our analysis focuses on revenue optimization rather than true profitability analysis."

Next Steps

- "Implement predictive modeling for monthly revenue forecasting and customer churn prediction using time-series and behavioral patterns."
- "Enrich dataset with demographic attributes and integrate real-time transaction feeds for continuous monitoring and personalized interventions."

THANK
YOU

