

E-commerce Growth & Commercial Strategy

Portfolio evidence summary | PostgreSQL | Historical public learning dataset | Analysis period: 2012-2015

The decision

How should a digital retailer shift marketing and product effort across channels, devices, and SKUs using conversion, revenue quality, engagement, and refund evidence?

Dataset and analytical build

Component	Evidence
Scale	1,735,068 records across six connected tables
Model	Products, sessions, pageviews, orders, order items, and refunds
Data quality	Row-count, date-range, and orphan-reference checks before analysis
Analysis	SQL joins, CTEs, time series, conversion funnels, revenue/session, refund rates, and correlation

Baseline commercial health

Metric	Observed value
Orders	32,313
Revenue	\$1,938,509.75
Average order value	\$59.99
Average gross margin / order	\$37.64
Total COGS	\$722,370.25

What the analysis found

1. Mobile is the largest funnel leak. Desktop converted at 8.50% versus 3.09% on mobile. Mobile traffic had grown from 25.4% to 33.4% between 2012 and 2014.

2. Channel quality differs from volume. Direct and bsearch produced \$4.46 and \$4.28 revenue per session, ahead of gsearch at \$4.04. Socialbook was weakest at 3.21% conversion and \$2.08 revenue per session.

3. Product growth needs a risk guardrail. Birthday Sugar Panda had the highest refund rate at 6.04%, compared with 1.28% for Hudson River Mini.

Decision evidence and recommendations

Channel and device evidence

Segment	Sessions	Orders	Conversion	Revenue / session
gsearch	316,035	21,333	6.75%	\$4.04
direct	83,328	6,118	7.34%	\$4.46
bsearch	62,823	4,519	7.19%	\$4.28
socialbook	10,685	343	3.21%	\$2.08
desktop	327,027	27,805	8.50%	\$5.09
mobile	145,844	4,508	3.09%	\$1.87

Deeper analysis

Question	Result	Interpretation
Does engagement relate to conversion?	Pearson $r = 0.669$	Converted sessions averaged 7.00 pageviews versus 2.18 for non-converted sessions.
Do repeat visitors spend more?	AOV $r = 0.015$; margin $r = 0.034$	Repeat visitors convert more often, but spend roughly the same per order.
What should retention optimize?	Repeat conversion: 7.83% vs 6.64% new	Prioritize conversion frequency and remarketing, not AOV uplift.

Recommended next actions

Prioritize a mobile funnel audit. Inspect product-detail, cart, and checkout friction before adding more paid traffic.

Reallocate or redesign low-quality social traffic. Use landing-page and session-depth diagnostics before increasing socialbook spend.

Investigate the product-specific refund signal. Check product expectation, listing quality, and purchase path for Birthday Sugar Panda before scaling promotion.

Use revenue per session and gross margin as guardrails. Do not optimize traffic volume or conversion alone.

Scope and limitations

This is a historical public learning dataset used for a capstone. Findings are analytical observations from the supplied data, not realized business impact or production recommendations. Correlation supports prioritization, not causal proof; recommendations require experiment design and operational validation.

Reproducibility and inspection guide

Public evidence available with this case

Artifact	What it demonstrates
PostgreSQL data model	Relational schema, keys, constraints, and indexes
Exploratory SQL	Table checks, traffic overview, device mix, and session-to-order join
Descriptive SQL	Commercial health, channel efficiency, device conversion, refunds, and repeat sessions
Correlation & metric SQL	Session depth, conversion association, repeat behavior, and revenue quality
Budget workbook and strategy deck	Decision narrative and planning guardrails

Metric definitions

Metric	Definition
Conversion rate	Orders divided by distinct website sessions
Revenue per session	Order revenue divided by distinct website sessions
Session depth	Count of pageviews per session
Gross margin %	$(\text{price_usd} - \text{cogs_usd}) / \text{price_usd}$
Refund rate	Refunded order items divided by sold order items

Reviewer note

The portfolio site exposes the SQL artifacts and presentation files for inspection. Raw source data is not bundled with the web build; it remains available in the original capstone environment and is not needed to reproduce the documented logic or assess the analytical work.

Prepared from the author's original Milestone 2 and Milestone 3 capstone deliverables. Values are kept as documented in those source artifacts.