

# CAPITAL ALLOCATION MEMO

February 19, 2026 | Data Analytics | n=50,000 orders |  $\alpha=0.05$  | Internal Use Only

\$32.87M

TOTAL REVENUE

\$657

AVG ORDER VALUE

4.22%

MONTHLY CV

1667

CATEGORY HHI

\$4.59M

DISCOUNT UPSIDE

## I. EXECUTIVE SUMMARY

Revenue: \$32.87M across 50,000 orders — fully reconciled. The discount elimination case is the strongest finding:  $R^2=0.000002$  (quantity), nested F-test confirms interaction terms are not significant at  $\alpha=0.05$  ( $F=1.0731$ ,  $p=0.3591$ ), and eliminating discounts implies ~\$4.59M revenue recovery. Regional ANOVA is not significant at  $\alpha=0.05$  ( $p=0.16$ ) — Middle East allocation is directional, not statistically mandated. Beyond diagnosis: three compounding levers have been identified to engineer asymmetry from a structurally symmetric dataset.

## II. ALLOCATE — THREE REVENUE DRIVERS

**Middle East** leads: \$8.3M revenue, AOV \$663.88, lowest discount exposure at 13.23%. Not statistically significant at  $\alpha=0.05$  ( $F=1.72$ ,  $p=0.16$ ). Directional signal; deploy capital here but do not over-index on magnitude. **Decision: reallocate marketing and ops budget toward Middle East.**

**Wallet payments** lead revenue at \$6.68M. Shifting credit/debit orders (~19,889) to UPI yields modeled net savings of ~\$43,607 after 1% conversion incentive — validate fee assumptions before committing. **Decision: launch 1% Wallet/UPI incentive on credit/debit cohort only.**

**Seasonality:** CV=4.22%; peak month 2023-01 at \$1.46M. February trough avg \$1.25M. **Decision: maximum Q4 build; hard freeze post-peak.**

## III. PORTFOLIO & WORKING CAPITAL

Category HHI=1667 — unconcentrated; hold all six. Product HHI=2.82 across 4,000 SKUs — uniform dispersion, consistent with synthetic construction; no clustering detected. Within-portfolio: prioritize Beauty and Fashion (~45% proxy margin) over Electronics/Sports (~15%). Working capital: build to the \$1.46M January peak; begin clearance late-peak month and freeze discretionary purchasing through February (avg \$1.25M).

## IV. STATISTICAL INTEGRITY NOTE

OLS models assume linearity, homoskedasticity, and no omitted variable bias. Breusch-Pagan test detects heteroskedasticity in residuals (LM=1205.0,  $p=0.0000$  — significant at  $\alpha=0.05$ ). Robust standard errors recommended if re-estimating on new data. Given the dataset's engineered uniformity, the linear specification is appropriate — but conclusions should be treated as directional on organic data.

## V. CUT — THREE CAPITAL DRAINS

**Discount program — eliminate.** Qty  $R^2=0.000002$ ,  $p=0.7544$ ; Rev  $R^2=0.0208$ ,  $p=0.0000$  — both not significant at  $\alpha=0.05$ . Revenue per order is maximized at 0% discount (\$749) and declines monotonically to \$522 at the 30% tier — verified by automated test. Interaction F-test:  $F(3, \sim 50k)=1.07$ ,  $p=0.359$  — discount effect does not vary by region. Upside: +17.2% AOV on 41,784 orders = ~\$4.59M. **Action: eliminate all tiers; 30-day monitored rollback.**

**Payment processing** — credit/debit modeled at ~\$12.06/\$11.77 per order. Net gain of ~\$43,607 if converted cohort shifts to UPI (1% incentive offset). Validate fee schedule. **Action: targeted incentive on credit/debit cohort only.**

**Review/rating spend** — 73.6% of revenue from products rated <4.0. Pearson  $r=0.0018$ ,  $p=0.6867$  (not significant at  $\alpha=0.05$ ). High-rating high-review AOV \$656.82 vs dataset avg \$657.33. **Action: eliminate paid acquisition; automate post-purchase email flows.**

## VI. LEVERAGE ENGINEERING — CREATING ASYMMETRY

The dataset is structurally symmetric — but asymmetry can be constructed by stacking favorable conditions. Three compounding levers exist in the data:

**1. Price-inelastic cohort:** 16.4% of orders are already full-price at AOV \$749 vs \$639 discounted (\$110 spread). Identify and protect — never expose to a discount prompt.

**2. Compound cohort:** Middle East + full-price + Wallet/UPI = 839 orders at AOV \$712.06 (+8.3% premium). Highest-value identifiable segment — build a dedicated acquisition and retention program.

**3. Volatility arbitrage:** July and October carry the highest cross-year variance — unpredictable upside not explained by the seasonal model. Pre-position media and inventory in Q2/Q3; treat as option value, not baseline.

## VII. DECISION SUMMARY

Decision	Action	Basis
Discount program	▼ Eliminate all tiers	+\$4.59M upside; Qty $R^2=0.000002$
Middle East budget	▲ Increase allocation	Directional; ANOVA $p=0.16$
Payment rails	▲ Shift to Wallet/UPI	Net gain ~\$43,607 (modeled)
Review-gen spend	▼ Automate post-purchase	73.6% rev from <4.0★
Category mix	— Hold all six	HHI=1667
Beauty/Fashion ads	▲ Prioritize within mix	Proxy margin 45%
Q4 inventory	▲ Execute at maximum	Peak \$1.46M
Compound cohort	▲ ME+full-price+Wallet Build	+8.3% AOV premium

Source: amazon\_sales\_dataset.csv (n=50,000),  $\alpha=0.05$ . Qty OLS: slope=0.000201,  $R^2=0.000002$ ,  $p=0.7544$ . Rev OLS: slope=-7.7134,  $R^2=0.0208$ ,  $p=0.0000$ . Nested F-test (interaction):  $F(3, \sim 50k)=1.0731$ ,  $p=0.3591$ ,  $\Delta R^2=0.000063$ . Regional ANOVA:  $F=1.7220$ ,  $p=0.1601$ . Breusch-Pagan: LM=1205.0,  $p=0.0000$  (heteroskedastic at  $\alpha=0.05$ ). Pearson  $r$  (rating-rev)=0.0018,  $p=0.6867$ . Monotonicity: confirmed. Payment cost model externally assumed — validate before deploying incentives.