Insight 1 — Monthly Sales Trend & Seasonality

What is happening?

Sales show clear monthly seasonality with peaks and troughs across the year. The highest sales months are clustered around Q4 (holiday period) and a mid-year spike (often May–June).

Why is it happening?

Seasonal consumer demand (holiday shopping, fiscal-year purchases) and promotional events drive Q4 peaks. Mid-year spikes often align with promotional campaigns or bulk buying cycles for business customers.

Actionable recommendations

1. **Plan inventory & promotions** to capitalize on Q4 and mid-year peaks — increase stock for top SKUs 6–8 weeks before expected peaks.
2. **Run targeted marketing** during identified pre-peak windows (2–3 weeks prior) to capture early demand.
3. **Use dynamic pricing** on high-demand SKUs during peak weeks to protect margin.

Insight 2 — Profitability Hotspots & Leaks (Category-wise)

What is happening?

Some categories (e.g., Office Supplies) show high sales but low profit margins; others (e.g., Technology or Furniture) deliver higher margins despite lower unit volumes.

A non-trivial portion of orders show negative profit (returns, heavy discounts, or mispriced items).

Why is it happening?

Low margins often result from heavy discounting, high logistics/fulfillment costs, or procurement costs not aligned with pricing.

Negative-profit orders cluster around high-discount transactions and specific SKUs with high return costs or warranty claims.

Actionable recommendations

1) **Reprice low-margin SKUs** or negotiate better procurement terms for high-volume, low-margin items.
2) **Limit promotional depth** on items with fragile margins; use non-price incentives (bundles, free shipping thresholds).
3) **Flag recurring negative-profit SKUs** and run root-cause (returns, damage, fulfillment issues).

4) **Introduce margin guardrails** in promotions: automatically cap discount % for items below a margin threshold.

Insight 3 — Customer & Segment Behavior

What is happening?

The **Corporate** and **Consumer** segments show different purchasing patterns: Corporate customers place fewer orders but with higher AOV; Consumer customers place frequent smaller orders.

Top 10% of customers contribute a majority share of revenue (~Pareto 80/20 or similar).

Why is it happening?

Corporate customers place bulk or repeat orders for operational supplies; consumers shop seasonally and are price-sensitive.

High concentration of revenue among few customers reflects typical B2B/B2C Pareto patterns.

Actionable recommendations

1. **Develop an account management strategy** for top customers (dedicated reps, volume discounts tied to margin-friendly terms).
2. **Create subscription or bulk-order options** for corporate clients to lock recurring revenue.
3. **Personalize promotions**: smaller targeted discounts and loyalty incentives for frequent consumer purchasers to increase retention and AOV.
4. **Implement churn monitoring** for top customers and early-warning alerts when order frequency drops.L

Insight 4 — Discount Impact on Profitability

What is happening?

Higher discount levels correlate with lower profits and more frequent negative-profit orders. Some discount bands show diminishing returns in volume uplift versus margin loss.

Why is it happening?

Discounts are applied across the board without granular margin checks; some high-discount promotions encourage purchases of low-margin items.

Actionable recommendations

1) **Adopt targeted discounting**: allow deeper discounts only on items with healthy gross margin or for customer acquisition where CLV justifies it.
2) **A/B test promotions** across discount levels and measure net contribution (incremental profit, not just sales uplift).
3) **Introduce promotion rules engine** that checks projected margin before approving discounts.

Insight 5 — Shipping Time & Operational Risk

What is happening?

Shipping times vary by region and shipping mode; a non-trivial number of orders have extended shipping times (>7 days) and these often align with larger negative feedback or higher return rates.

Why is it happening?

Longer shipping times arise from remote regions, carrier issues, or internal fulfillment delays. Longer transit increases return risk and customer dissatisfaction.

Actionable recommendations

1. **Optimize fulfillment by region** — consider regional warehouses or smarter allocation rules for slow-moving SKUs.
2. **Introduce shipping time SLAs** with carriers and monitor exceptions; escalate top offenders.
3. **Offer premium shipping options** for customers willing to pay for faster delivery to protect margins on time-sensitive orders.

Insight 6 — Outlier Orders & Fraud/Exception Detection

What is happening?

A small set of orders are extreme outliers — very high sales values or very large negative profits. These concentrate around specific customers, SKUs, or time windows.

Why is it happening?

Outliers can be legitimate (large corporate purchase), data errors (wrong unit prices), or exceptions (fraud, returns, misapplied discounts).

Actionable recommendations

1) **Create automated outlier alerts** for orders above the 95th percentile of Sales or Profit < -X threshold to trigger manual review.
2) **Add data validation checks** at order-entry (price vs MSRP, discount limit checks) to reduce entry errors.
3) **Investigate top outlier orders** and document corrective actions (refunds, restocking, supplier credits).