

Sales & Profitability Analysis — Management Report

Executive Summary: This analysis covers transactional sales data (64k orders) with fields for geography, channel, product, time, and profitability.

Business Problem:

Provide the leadership team with a clear, data-driven view of:

- Which products, channels and states drive revenue and profit.
- Whether the company's revenue growth is seasonal or consistent.
- Opportunities to improve overall profitability (improve margins, rebalance channel mix, and reduce concentration risk).
- Alignment between spend/budget and realised revenue/profit (budget field exists at the aggregated level).

Business questions answered:

1. Who are the top customers/products/states by revenue and profit?
2. Which channel yields the best margin per rupee of revenue?
3. Are there clear seasonal patterns to exploit for marketing/sales planning?
4. How should the budget be reallocated for maximum ROI?

Data Loading:

Key columns: order_number, order_date, customer_name, channel, product_name, quantity, unit_price, revenue, cost, total_cost, profit, profit_margin_pct, state, us_region, lat, lon, budget, order_month, order_month_name, order_month_num.

Exploratory Data Analysis (EDA) — Key Findings & Supporting Numbers

1. Overall distribution (quick stats)

~64k transactions.

The average order quantity \approx is 8 units.

Average unit price \approx ₹2,284, revenue per order average \approx ₹19.3k.

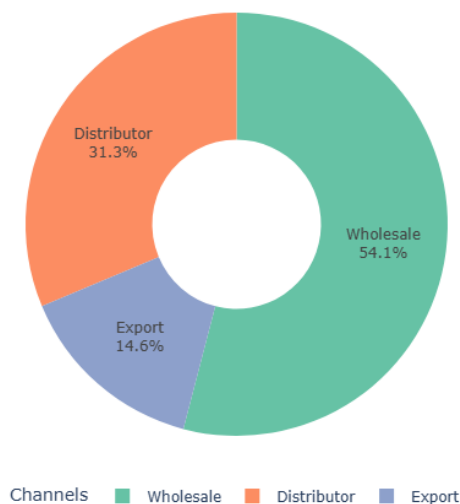
Average profit per order \approx ₹7.20k, and average profit margin pct \approx 37.4%.

| | count | mean | std | min | 25% | 50% | 75% | max |
|-------------------|---------|---------------|--------------|--------------|---------------|---------------|---------------|---------------|
| quantity | 64104.0 | 8.441689e+00 | 2.276217e+00 | 5.00000 | 6.000000e+00 | 8.000000e+00 | 1.000000e+01 | 1.200000e+01 |
| unit_price | 64104.0 | 2.284381e+03 | 1.663598e+03 | 167.50000 | 1.031800e+03 | 1.855900e+03 | 3.606275e+03 | 6.566000e+03 |
| revenue | 64104.0 | 1.928068e+04 | 1.542960e+04 | 837.50000 | 8.019900e+03 | 1.402310e+04 | 2.741640e+04 | 7.871160e+04 |
| cost | 64104.0 | 1.432084e+03 | 1.107706e+03 | 68.67500 | 6.062160e+02 | 1.084495e+03 | 2.046934e+03 | 5.498556e+03 |
| lat | 64104.0 | 3.776943e+01 | 5.068599e+00 | 25.46872 | 3.395333e+01 | 3.911417e+01 | 4.167655e+01 | 4.875955e+01 |
| lon | 64104.0 | -9.424712e+01 | 1.688433e+01 | -123.26204 | -1.120341e+02 | -8.820090e+01 | -8.040700e+01 | -7.025533e+01 |
| budget | 15263.0 | 2.989305e+06 | 1.557271e+06 | 594471.57000 | 1.672229e+06 | 3.016489e+06 | 3.925425e+06 | 5.685138e+06 |
| total_cost | 64104.0 | 1.207719e+04 | 1.018043e+04 | 351.75000 | 4.793850e+03 | 8.789562e+03 | 1.681646e+04 | 6.533063e+04 |
| profit | 64104.0 | 7.203491e+03 | 6.626122e+03 | 125.62500 | 2.542550e+03 | 5.091464e+03 | 9.922164e+03 | 4.555946e+04 |
| profit_margin_pct | 64104.0 | 3.735942e+01 | 1.323865e+01 | 15.00000 | 2.600000e+01 | 3.700000e+01 | 4.900000e+01 | 6.000000e+01 |
| order_month_num | 64104.0 | 6.345251e+00 | 3.524312e+00 | 1.00000 | 3.000000e+00 | 6.000000e+00 | 9.000000e+00 | 1.200000e+01 |

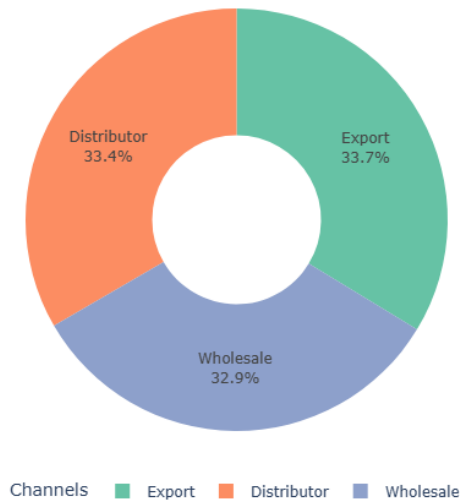
2. Channel performance (volume vs margin):

- **Revenue by channel**
 - Wholesale: ₹668,197,244.4 → **54.06%** of total revenue.
 - Distributor: ₹387,139,788.6 → **31.32%**.
 - Export: ₹180,631,866.0 → **14.61%**.
- **Profit margin by channel**
 - Export ≈ **37.93%** (highest).
 - Distributor ≈ **37.56%**.
 - Wholesale ≈ **37.09%** (lowest).
- Insight: Wholesale is volume-driven but slightly margin-compressed — trade-off: high revenue, lower per cent margin.

 Revenue Distribution by Sales Channel



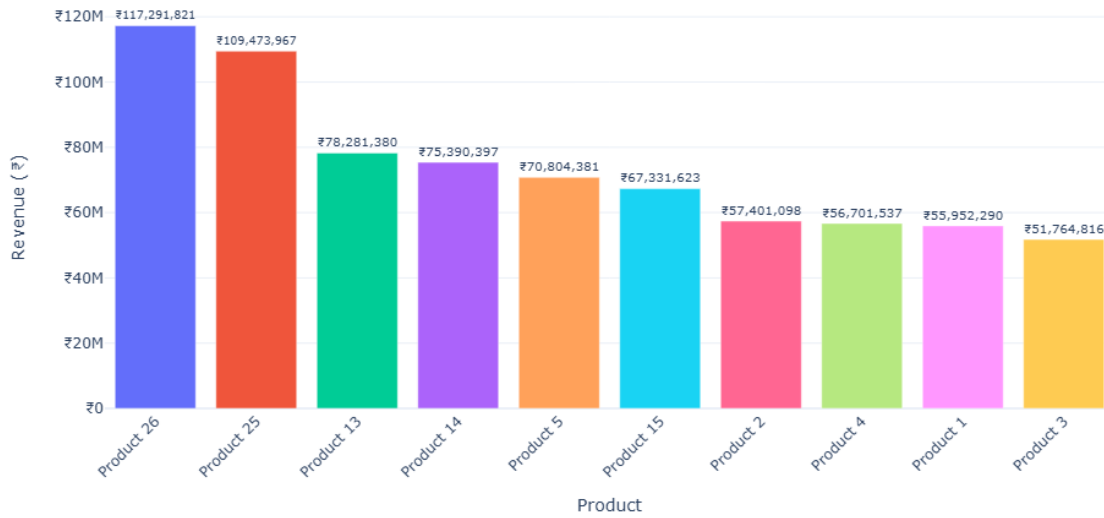
💰 Profit Margin Distribution by Channel



3. Product-level performance

- **Top 10 products by revenue** (descending):
 1. Product 26 — ₹117,291,821.4
 2. Product 25 — ₹109,473,966.6
 3. Product 13 — ₹78,281,379.6
 4. Product 14 — ₹75,390,396.6
 5. Product 5 — ₹70,804,380.6
 6. Product 15 — ₹67,331,623.2
 7. Product 2 — ₹57,401,097.6
 8. Product 4 — ₹56,701,537.2
 9. Product 1 — ₹55,952,289.6
 10. Product 3 — ₹51,764,816.4
- Many top revenue products also post healthy margin ($\approx 37\text{--}38\%$) → indicates profitable core SKUs.

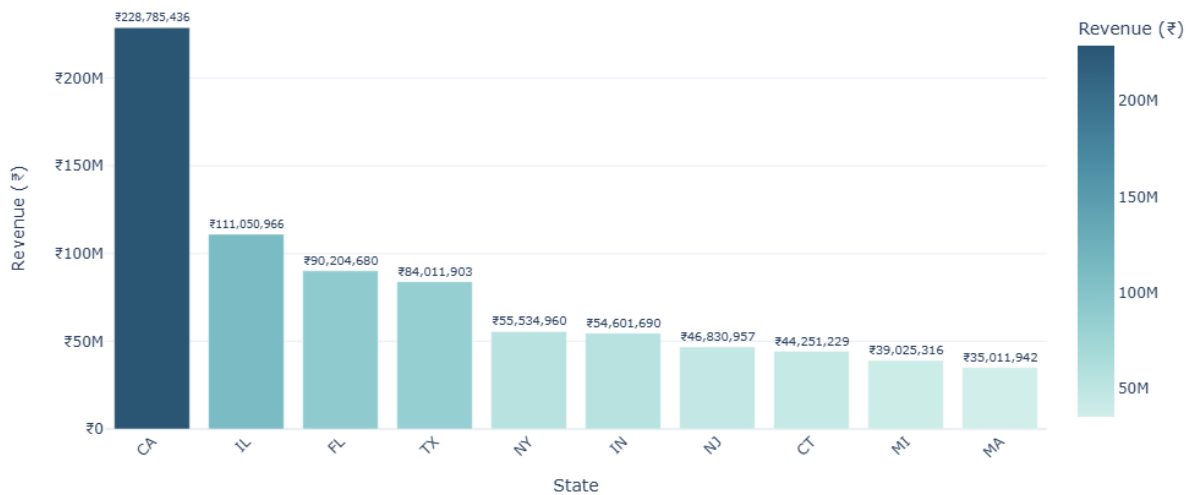
🛒 Revenue by Product(Top 10)



4.State / Geographic analysis

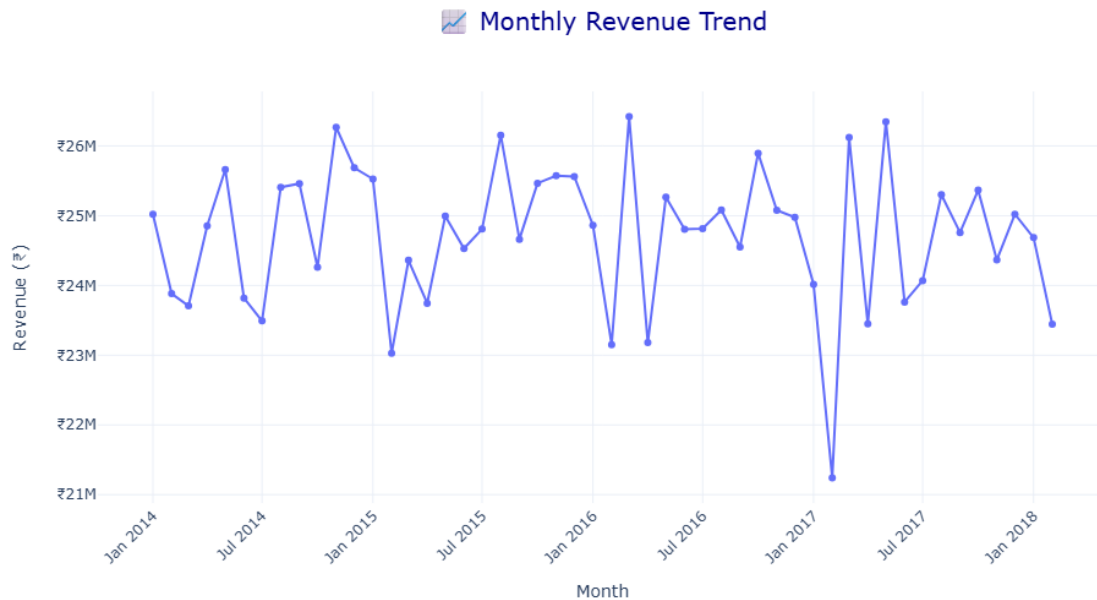
- **Top states by revenue:**
 - CA: ₹228,785,436.0 (largest concentration)
 - IL: ₹111,050,965.7
 - FL: ₹90,204,679.5
 - TX: ₹84,011,903.0
 - NY: ₹55,534,960.0
- Insight: Strong concentration in a few states—CA alone is ~2× next-largest state (IL).

📍 Revenue by State(Top 10)



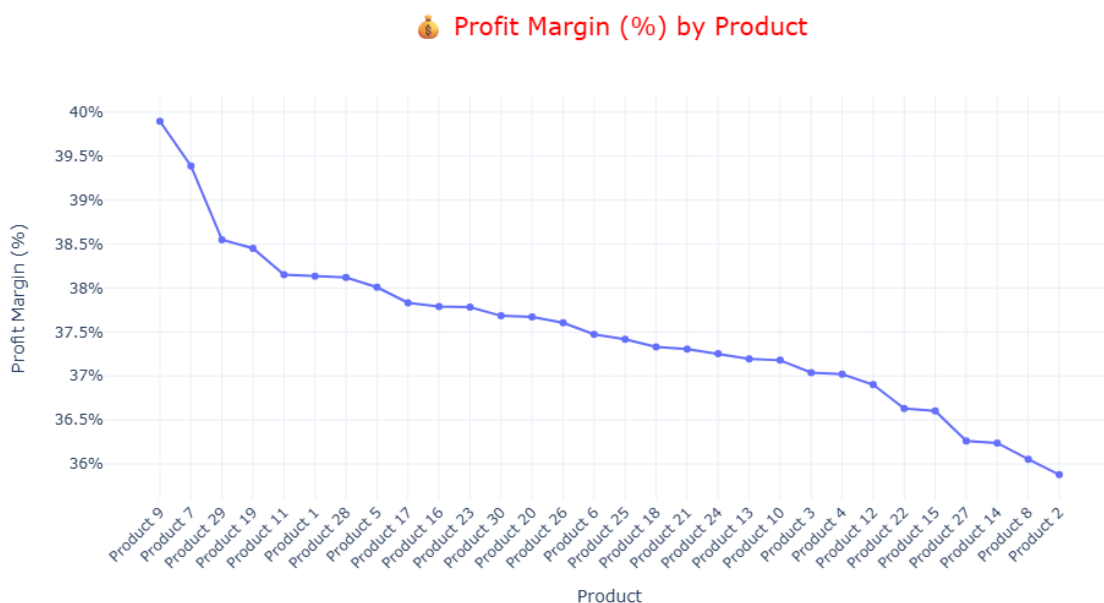
5. Time-series (monthly)

- Monthly revenue is **stable** across years, typically **in the low-to-mid ₹20M** range per month with occasional peaks (Nov/Dec).
- No single month shows extreme volatility — indicates steady recurring demand and potential for predictable promotions.



6. Profitability distribution

- Product margins range roughly **35%–40%**, with average near **37%**.
- No single product shows extremely low margin — good baseline profitability.



Problem Solving (actions derived from analysis)

Below are practical recommendations tied to the business problems.

A. Reduce concentration risk

- **Problem:** Revenue concentrated in the Wholesale channel and in CA and the top few products.
- **Action:**
 - Expand Distributor/Export efforts for selected top products to diversify channel mix.
 - Geographic expansion programs for top products into next-tier states (e.g., NJ, CT, MI) with targeted promotions.

B. Improve margin on high-volume channel

- **Problem:** Wholesale is the highest revenue but has the lowest margin.
- **Action:**
 - Negotiate pricing tiers or packaging with wholesale customers; create incentives for slightly higher-priced bundles.
 - Identify high-volume SKUs with lower margins and investigate cost structure (supplier costs, shipping, custom packaging).
 - Consider selective price increases for low-elasticity SKUs.

C. Product portfolio optimisation

- **Problem:** A few products deliver the majority of revenue — both an opportunity and a risk.
- **Action:**
 - Double down marketing & inventory priority on Product 26 & 25 (top 2) while maintaining supply chain buffers.
 - For mid-tier products with lower margins, either improve the cost base or reposition as loss leaders.

D. Seasonal planning

- **Problem:** Predictable Nov–Dec lifts and Feb dips.
- **Action:**
 - Plan marketing campaigns and inventory for Q4 peaks.
 - Use February (historically a lower month) for promotions or product launches to smooth revenue.

E. Budget allocation & ROI tracking

- **Problem:** The budget exists at an aggregated level and is partially unmapped.
- **Action:**
 - Map budget to the US region & order month so you can compute ROI = revenue/budget at the region-month level.
 - Reallocate budgets to regions/channels with higher ROI (e.g., Export if it shows a higher margin per campaign).
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Conclusion

- The business shows **strong and stable revenue** with **healthy margins (~37%)**.
- **Wholesale** drives the majority of revenue but at the lowest margin among channels — this is the key trade-off.
- A small number of products & states contribute a large share of revenue — protect and diversify this concentration.
- Short-term actions: map budget to region/month, negotiate Wholesale economics, promote Export where margins are higher, and plan Q4 inventory/marketing around seasonal peaks.