Vendor Efficiency and Performance Report

# Business Objective

Effective management of sales and inventory plays a vital role in maximizing profits in the retail and wholesale sectors. Companies need to reduce losses caused by pricing inefficiencies, inventory stagnation, or overdependence on specific vendors. This analysis aims to:

- Identify brands with low sales that may benefit from marketing or price adjustments.

- Highlight top-performing vendors driving sales and profitability.

- Understand how purchasing volume influences unit costs.

- Evaluate stock turnover to cut storage costs and enhance efficiency.

- Compare profit margins across vendor performance tiers.

# Data Insights & Initial Observations

Summary Metrics Overview

- Gross Profit: The lowest recorded value was -52,002.78, highlighting potential losses from pricing below purchase cost or excessive discounts.

- Profit Margin: Instances of negative infinity suggest cases where revenue was zero or less than cost, drastically reducing profitability.

- Sales Quantity & Revenue: Some products showed no sales, indicating overstock or irrelevant inventory.

High Variation Outliers

- Price Range: Purchase and actual prices ranged up to $7,499.99, well above average figures, suggesting premium item listings.

- Shipping Costs: Freight charges ranged from $0.09 to $257,032.07, indicating inconsistencies in shipping or logistics.

- Stock Turnover: Spanning from 0 to 274.5, showing a mix of slow- and fast-selling products. Turnover >1 suggests prior inventory was used to fulfill orders.

Data Cleaning Process

To ensure accuracy, entries were filtered to exclude:

- Gross Profit ≤ 0 (loss-generating transactions).

- Profit Margin ≤ 0 (unprofitable sales).

- Sales Quantity = 0 (unsold inventory).

# Correlation Analysis

- Purchase Price vs Sales & Profit: Weak correlation (-0.012 and -0.016), indicating that unit price has minimal impact on revenue or profit.

- Purchase vs Sales Quantity: Near-perfect correlation (0.999), suggesting strong inventory turnover.

- Profit Margin vs Sales Price: Slight negative correlation (-0.179), implying competitive pricing might erode margins.

- Turnover vs Profitability: Weak negative correlation (-0.038 & -0.055), meaning higher turnover doesn’t guarantee better profits.

# Key Analytical Findings

1. Brands Needing Marketing or Price Action

- 198 brands had strong margins but low sales. Promotional strategies or re-pricing may help boost volume while retaining profitability.

2. Vendor Sales and Purchase Concentration

- Top 10 vendors account for 65.69% of purchases. Heavy reliance on a few vendors creates potential supply chain risks. Broader vendor sourcing is advised.

3. Bulk Purchase Benefits

- Larger order volumes achieve 72% lower unit costs (as low as $10.78 per unit), favoring bulk buying policies for savings and profitability.

4. Low Stock Turnover Vendors

- Unsold inventory capital stands at $2.71 million. High storage costs and tied-up capital indicate a need for better inventory planning.

5. Profitability Comparison: High vs Low Vendors

- Top Vendors: Average margin ~31.17% (CI: 30.74% - 31.61%)

- Low Vendors: Higher margin ~41.55% (CI: 40.48% - 42.62%), but lower sales volumes, suggesting pricing or market issues.

- Strategic Suggestions:

- Top vendors: Improve margins via pricing strategies or bundling.

- Low vendors: Focus on expanding market reach and refining pricing.

6. Profit Margin Significance Testing

- Hypothesis test confirms a statistically significant difference in margins between high and low-performing vendors.

- Implication: High-margin vendors use stronger pricing strategies; high-sales vendors may benefit from operational optimizations.

# Strategic Recommendations

- Revise Prices: Consider re-pricing low-volume, high-margin brands to increase demand.

- Expand Vendor Base: Reduce reliance on top vendors by exploring alternative suppliers.

- Encourage Bulk Orders: Take advantage of lower unit costs through bulk purchasing.

- Reduce Inventory Backlog: Implement clearance sales or revise stocking policies for slow-moving items.

- Support Low Performers: Boost marketing and optimize logistics for underperforming vendors.

By applying these measures, the organization can enhance profitability, stabilize operations, and strengthen long-term performance.

# Visuals:



















