

# **Business Problems**

## **Category 1: Sales and Revenue Insights**

### **1. Top Selling Products**

- Identify the top 10 products by total sales value.
- *Challenge:* Include product name, total quantity sold, and total sales value.

### **2. Revenue by Category**

- Calculate the total revenue generated by each product category.
- *Challenge:* Include the percentage contribution of each category to total revenue.

### **3. Product Profit Margin**

- Determine the profit margin for each product (difference between price and cost of goods sold).
- *Challenge:* Rank products by their profit margin from highest to lowest.

### **4. Top Performing Sellers**

- Identify the top 5 sellers based on total sales value.
- *Challenge:* Include both successful and failed orders, and display their percentage of successful orders.

### **5. Revenue by Shipping Provider**

- Calculate the total revenue handled by each shipping provider.
- *Challenge:* Include the total number of orders handled and the average delivery time for each provider.

### **6. Top 10 Products with Declining Revenue**

- Find the top 10 products with the highest revenue decrease ratio between last year (2022) and the current year (2023).
- *Challenge:* Include product ID, name, category, 2022 revenue, and 2023 revenue decrease ratio (rounded).
- *Formula:*  $(\text{current\_year} - \text{last\_year}) / \text{last\_year} * 100$ .

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## **Category 2: Customer Insights**

### **7. Average Order Value (AOV)**

- Compute the average order value for each customer.

- *Challenge:* Include only customers with more than 5 orders.

#### **8. Customer Lifetime Value (CLTV)**

- Calculate the total value of orders placed by each customer over their lifetime.
- *Challenge:* Rank customers based on their CLTV.

#### **9. Customers with No Purchases**

- Identify customers who have registered but never placed an order.
- *Challenge:* Include customer details and the time since their registration.

#### **10. Returning vs. New Customers**

- Categorize customers based on their return frequency: more than 5 returns as "Returning," others as "New."
- *Challenge:* Include customer ID, name, total orders, and total returns.

#### **11. Cross-Sell Opportunities**

- Identify customers who purchased Product A but not Product B (e.g., customers who bought AirPods but not AirPods Max).
- *Challenge:* Suggest cross-sell opportunities by displaying matching product categories.

#### **12. Top 5 Customers by Orders in Each State**

- Identify the top 5 customers with the highest number of orders for each state.
- *Challenge:* Include the number of orders and total sales for each customer.

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### **Category 3: Operational Efficiency**

#### **13. Monthly Sales Trend**

- Analyze monthly total sales over the past year.
- *Challenge:* Compare sales for the current month and last month.

#### **14. Shipping Delays**

- Identify orders where the shipping date is more than 3 days after the order date.
- *Challenge:* Include customer, order details, and delivery provider.

#### **15. Orders Pending Shipment**

- Identify orders that have been paid but are still pending shipment.
- *Challenge:* Include order details, payment date, and customer information.

#### **16. Inactive Sellers**

- Identify sellers who haven't made any sales in the last 6 months.
- *Challenge*: Show the last sale date and total sales from those sellers.

#### **17. Inventory Stock Alerts**

- Find products with stock levels below a certain threshold (e.g., less than 10 units).
  - *Challenge*: Include the last restock date and warehouse information.
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### **Category 4: Performance Metrics**

#### **18. Payment Success Rate**

- Calculate the percentage of successful payments across all orders.
- *Challenge*: Include breakdowns by payment status (e.g., failed, pending).

#### **19. Least-Selling Categories by State**

- Identify the least-selling product category for each state.
- *Challenge*: Include the total sales for that category within each state.

#### **20. Most Returned Products**

- Identify the top 10 products by the number of returns.
  - *Challenge*: Calculate the return rate as a percentage of total units sold for each product.
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