Revenue Analysis and Actionable Solutions
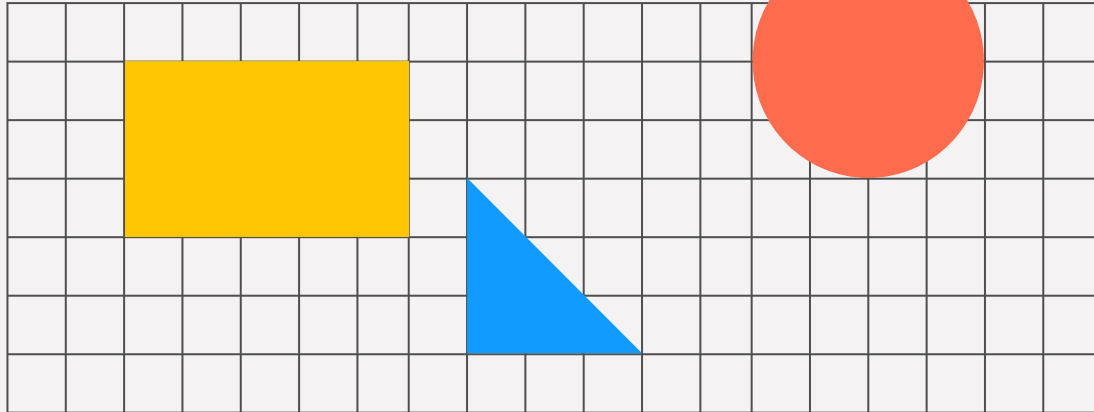
ECO 32500: Python for Business Analytics
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Question

- *What actions can the company take to improve profits next quarter?*

- *Can the Q4 to Q1 dips be resolved?*

Data Collection and Preparation

SQL

Retrieve Data

Python

Data Analysis

Matplotlib

Data Visualization

Data Collection and Preparation

Data Collection and Integration

- Extracted data from SQL tables: sales, products, stores, customers, and exchange rates.
- Merged tables on common keys to create a unified dataset for analysis.

Feature Creation

- Calculated **Revenue** and **Profit**:
  - *Revenue* = `Quantity × Unit Price`
  - *Profit* = `Quantity × (Unit Price - Unit Cost)`

Trend Analysis

- Identified **Top Products** by Quantity and Profit.
- Analyzed monthly and quarterly sales trends to detect dips (e.g., Q4 to Q1 decline).

Regional and Store Efficiency

- Calculated **Profit per Store Size** to find the most efficient stores.
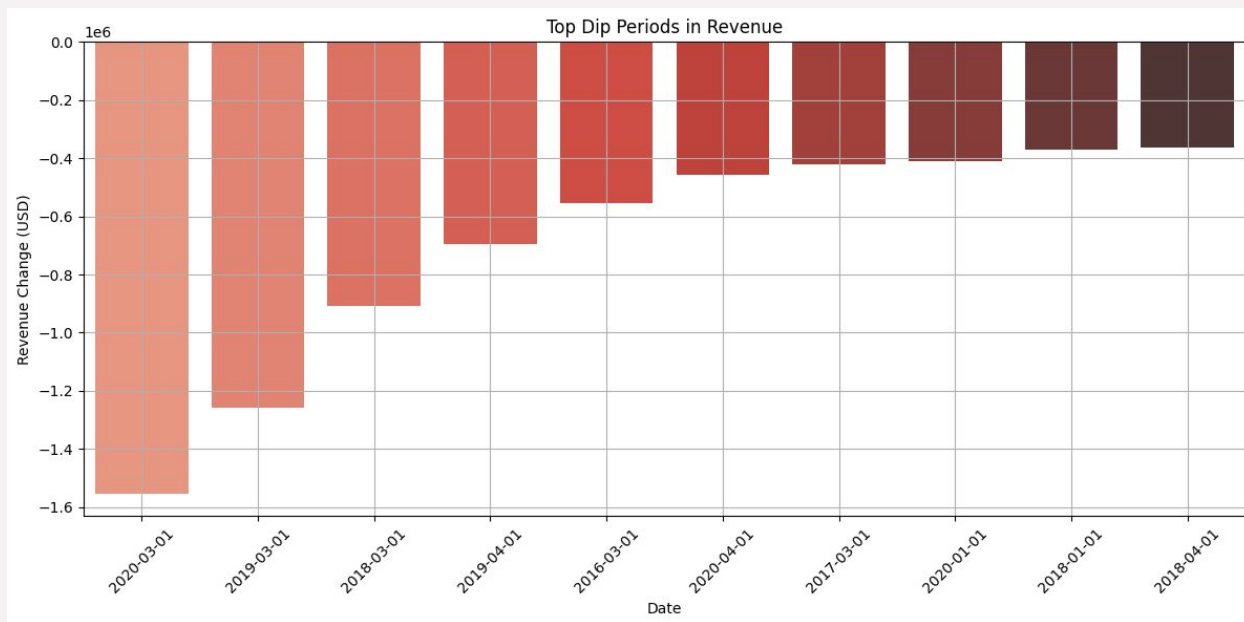- Compared store performance across regions and sizes.

Visualization

- Created clear charts for revenue trends, product performance, and regional efficiency.
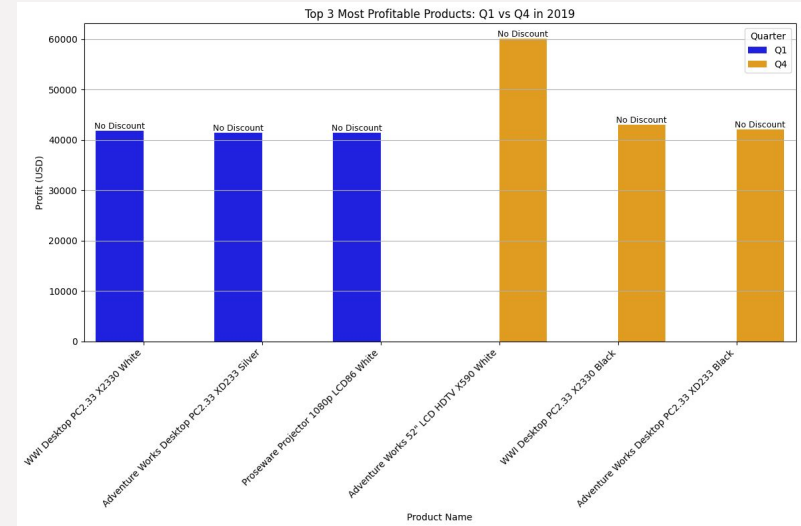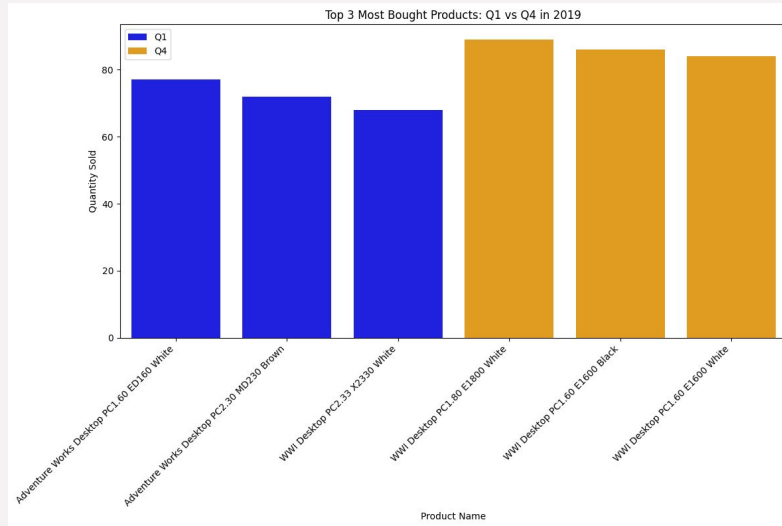
Analysis: General Profit/Revenue Trend
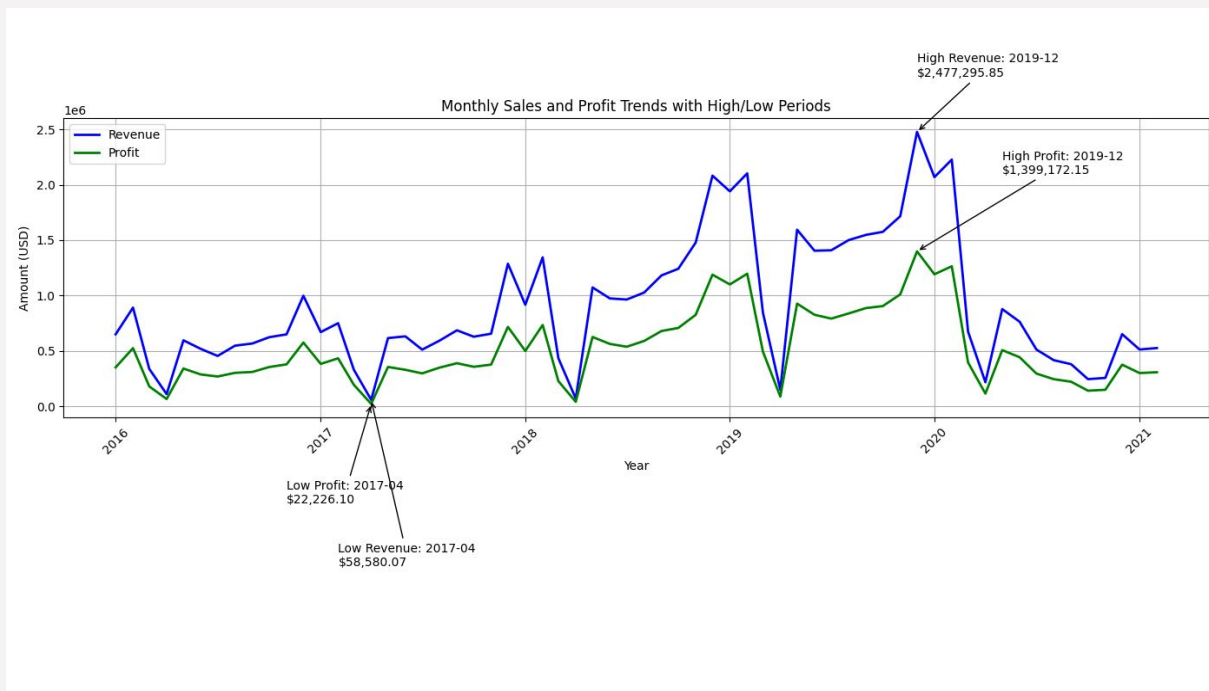
- Frequent Q1 Dips
- What is the driving decline, and how can we fix it?

Analysis: Frequent Dips

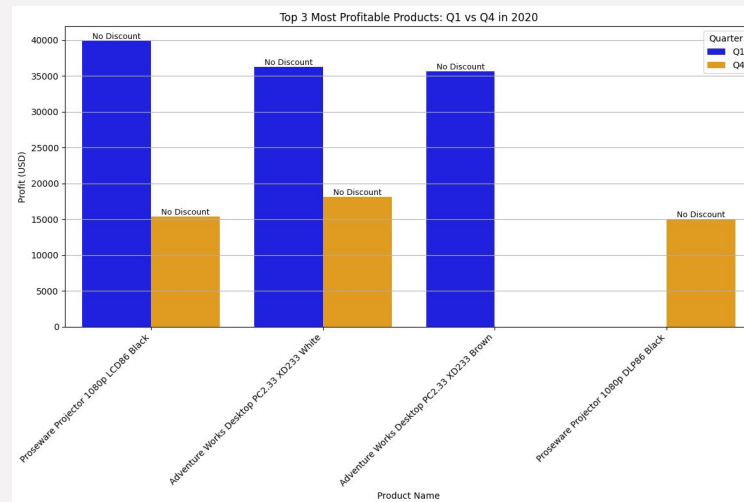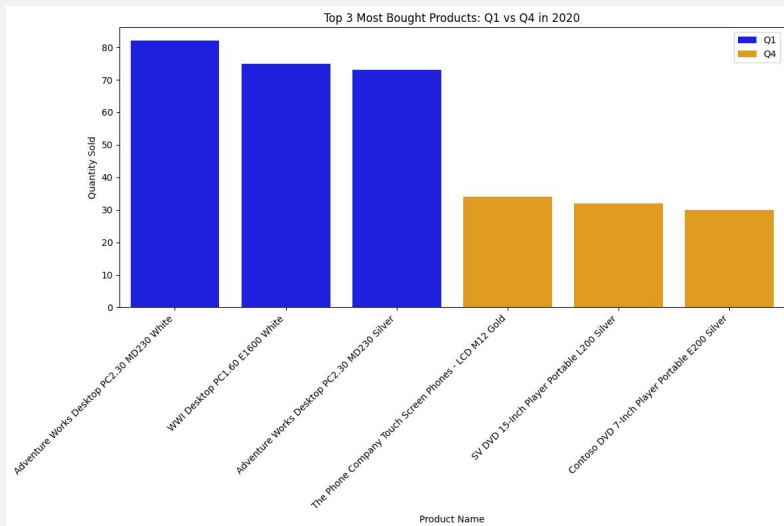Top Dip Periods in Revenue

- Frequent dips around January-April
- Historically very weak Q1 drop off
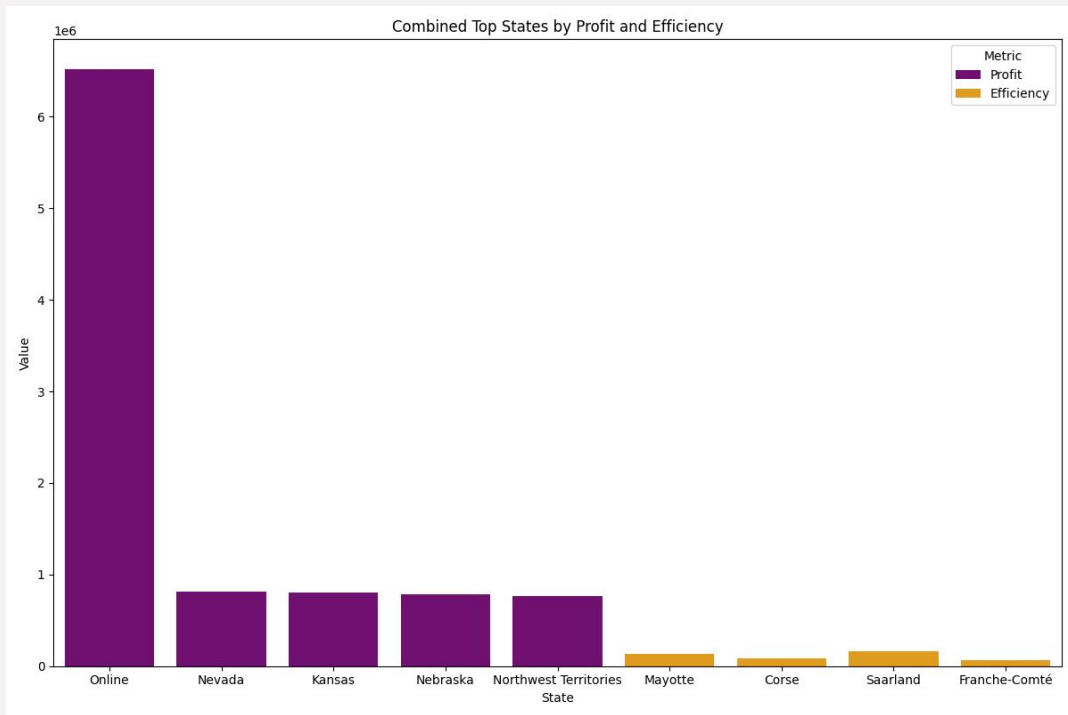
Analysis: Quantity and Profitability

- Little correlation between most profitable items vs most bought products in 2019
  - "WWI Desktop PC2.33 X2330 White" only similar product in both categories

Analysis: Quantity and Profitability

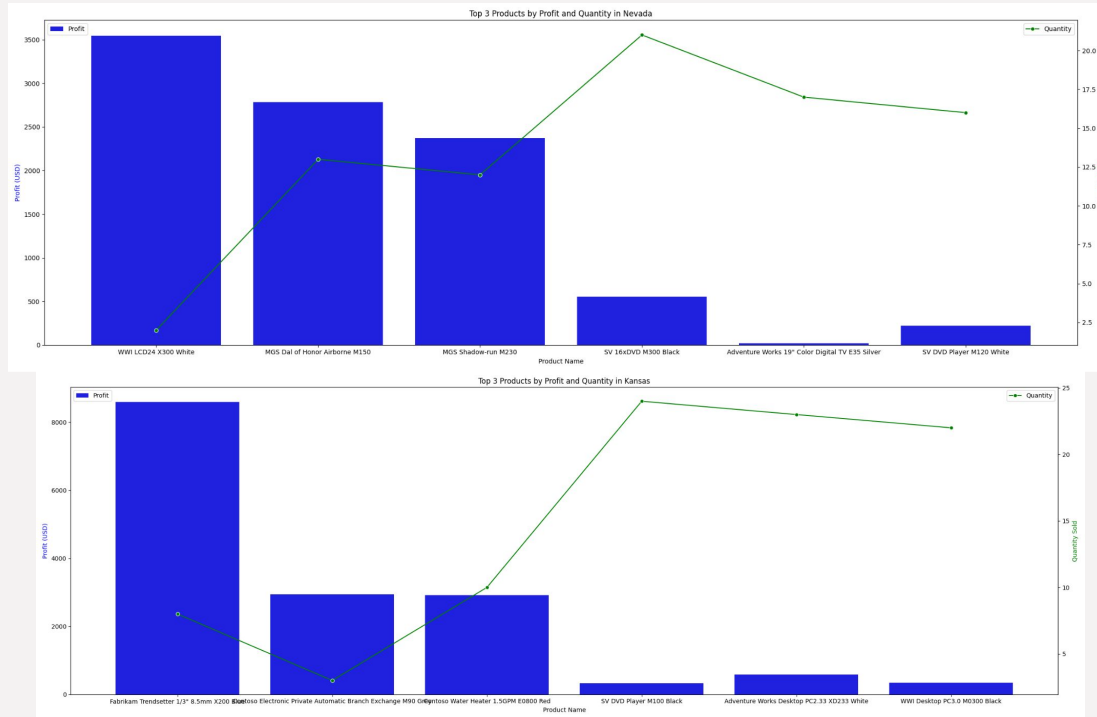● No correlation between most profitable items vs most bought products in 2020

Analysis: Regions by Profit

Combined Top States by Profit and Efficiency

- Online sales dominated in profit
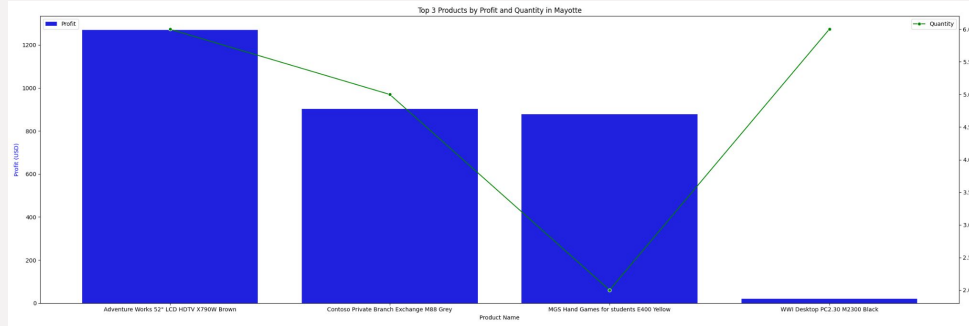- Efficient stores calculated based on profit per square meter.

Analysis: Profit x Quantity by Store

- Low quantity, High profitability
- High quantity, low profitability

Analysis: Profit x Quantity by Store

Top 3 Products by Profit and Quantity in Mayotte

Top 3 Products by Profit and Quantity in Corse
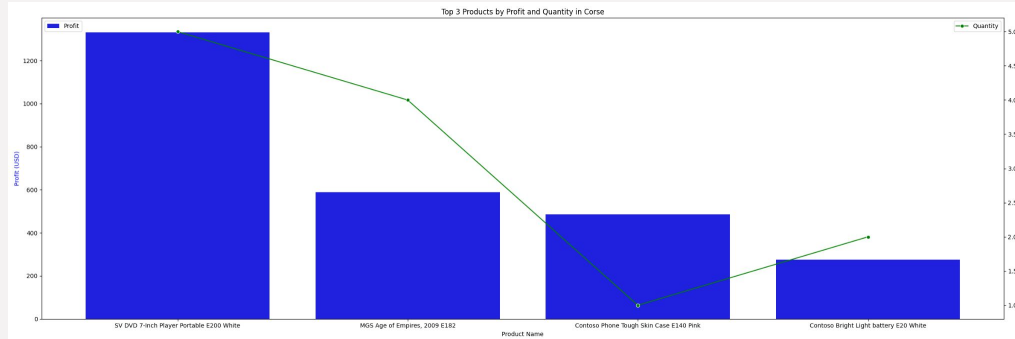
- Again, general trend for demand for products aren't nearly as possible

Analysis: Sales Breakdown by Store Size
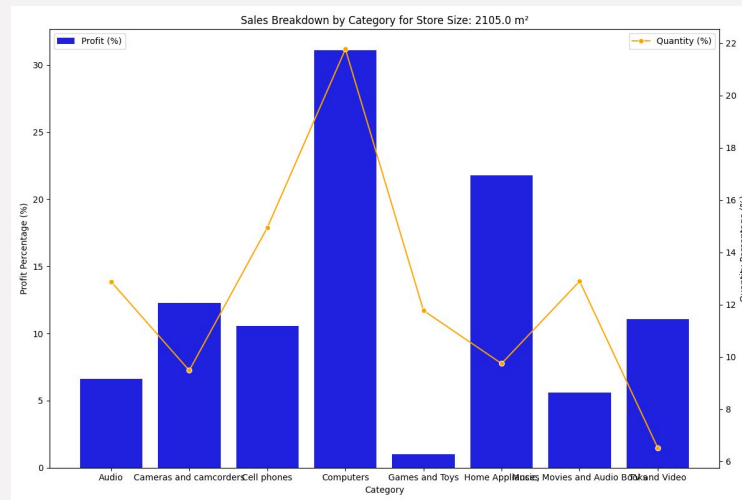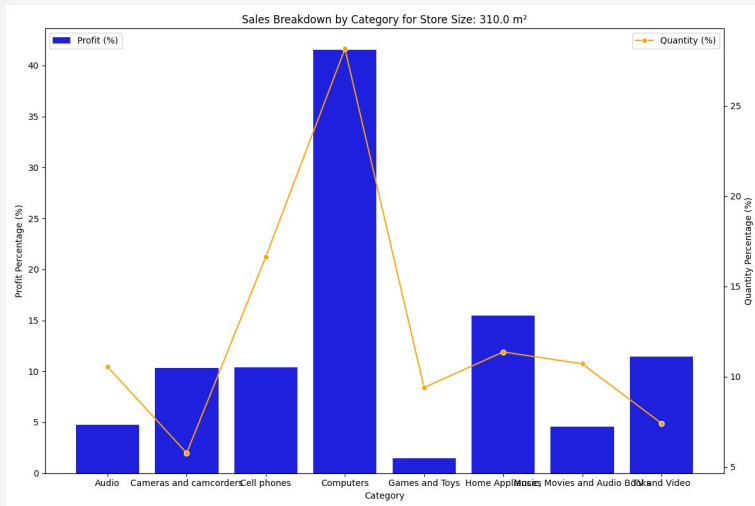
- Smallest store vs largest store have different demand and profitability per category

Analysis: Sales Breakdown by Store Size Outlier

Sales Breakdown by Category for Store Size: 385.0 m²

- Smallest store vs largest store have even more different demands.

Recommendations

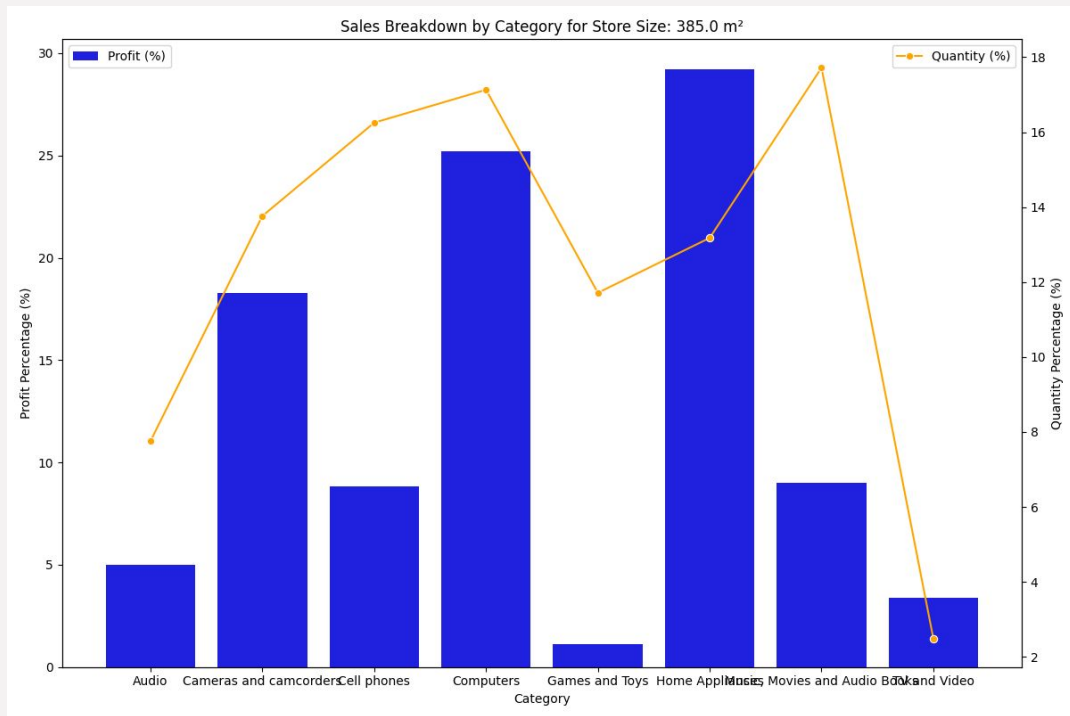**Address the Q4 to Q1 Sales Dip**
- Implement Q1-targeted promotions for top Q4 products to sustain momentum.
- Focus on high-performing products to stabilize revenue and smooth out seasonal dips.

Action:
- Implement **Q1-targeted promotions** for top Q4 products to sustain momentum.
- Focus on high-performing products to stabilize revenue and smooth out seasonal dips.
  - ○

Optimizing Pricing for Misaligned Products
- High Quantity, Low Profitability:
  - Categories like "TV & Videos," "Music, Movies, and Audio Books," and "Games and Toys"
- High Profit, Low Quantity:
  - Products like "Cameras and Camcorders" and "Home Appliances" in French stores

Action:
- **Price Optimization:** Adjust pricing to improve margins for high-quantity products.
- **Target Marketing:** Increase visibility for profitable but underperforming products.
  - ○

Conclusion

- **Address Q1 Sales Dip:**
  - Targeted promotions for Q4 top products to sustain demand and stabilize revenue.
- **Optimize Pricing:**
  - Adjust pricing for high-quantity, low-profit items.
  - Enhance visibility for profitable underperforming products through targeted marketing.
- **Tailor Store-Specific Strategies:**
  - Align solutions with store-specific product demands to maximize efficiency and profitability.

This will allow stabilized revenue, improved margins, and a clear path to stronger performance in the next quarter.