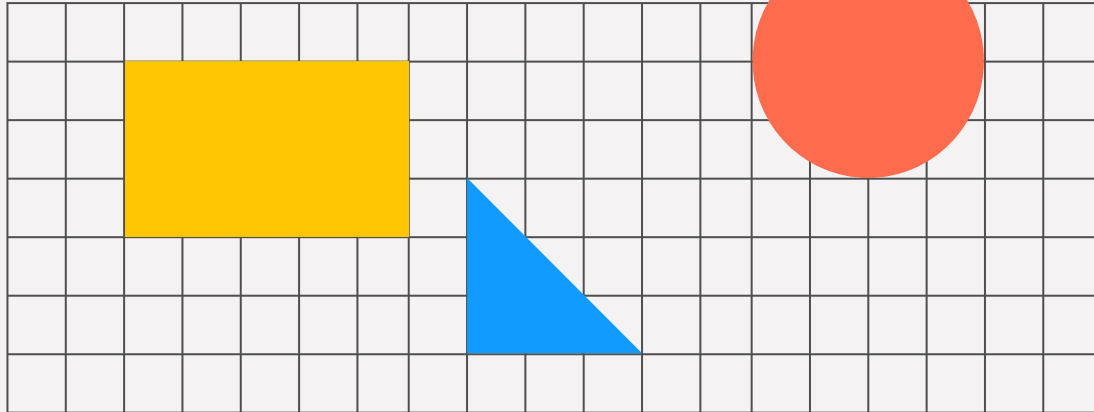


# Revenue Analysis and Actionable Solutions



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**

**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**:
  - $Revenue = Quantity \times Unit\ Price$
  - $Profit = Quantity \times (Unit\ Price - Unit\ Cost)$

## Trend Analysis

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

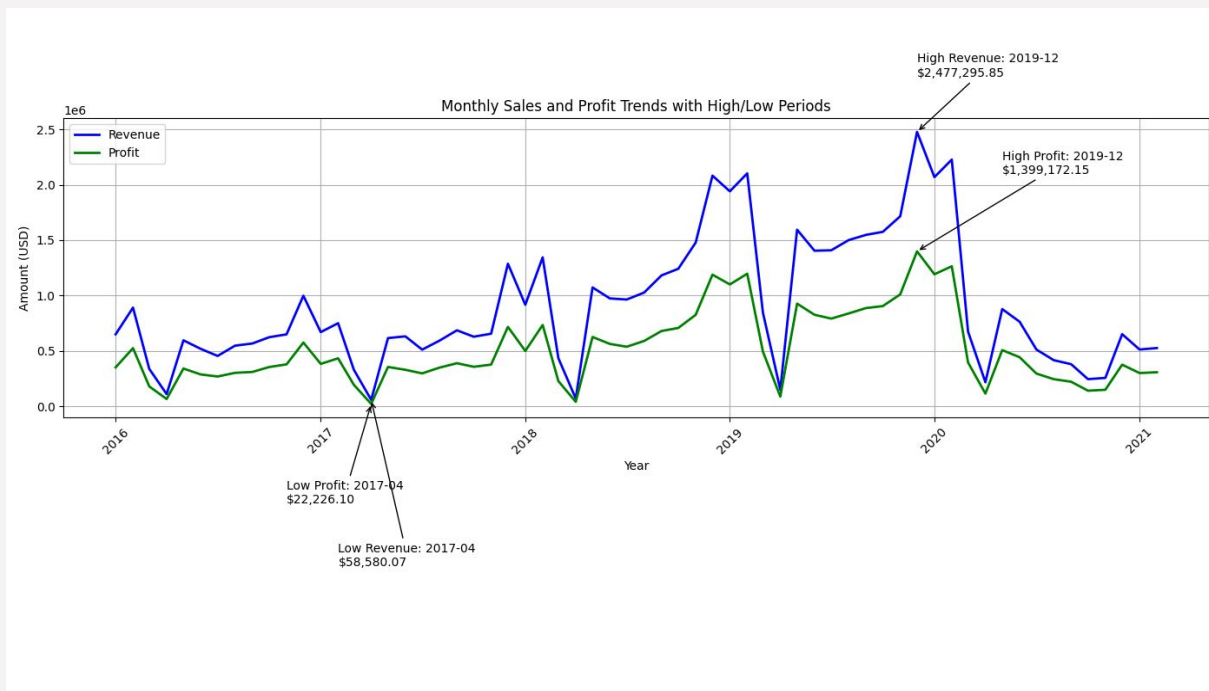
## Regional and Store Efficiency

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

## Visualization

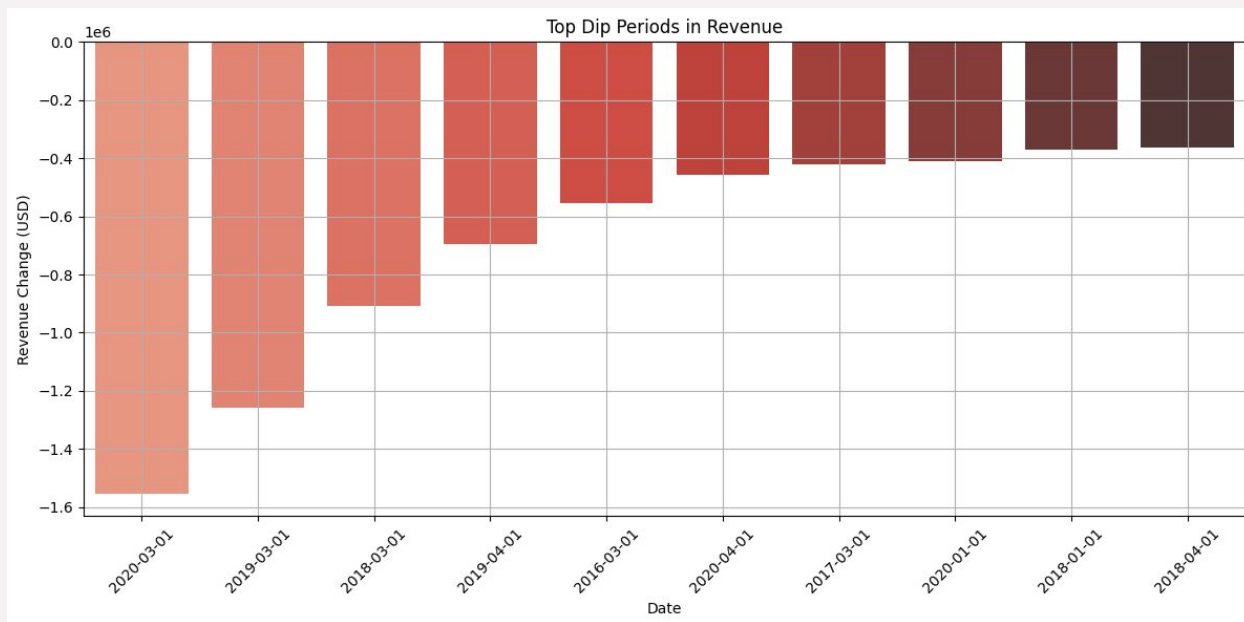
- Created clear charts for revenue trends, product performance, and regional efficiency.

# Analysis: General Profit/Revenue Trend



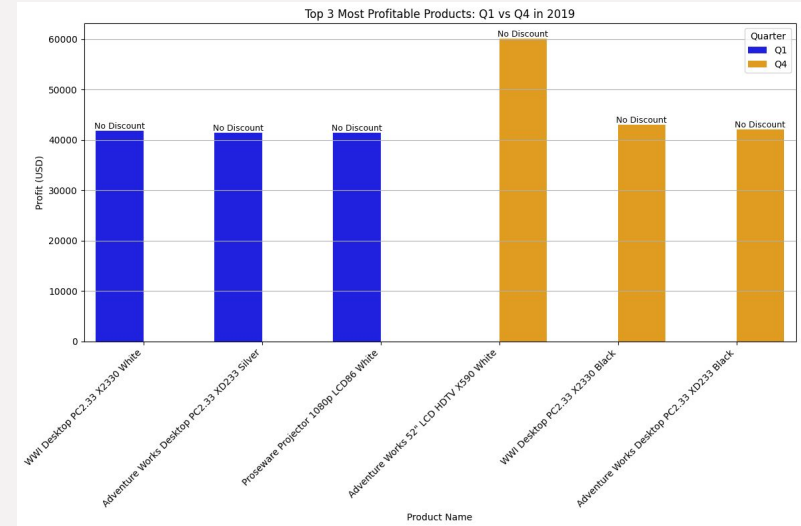
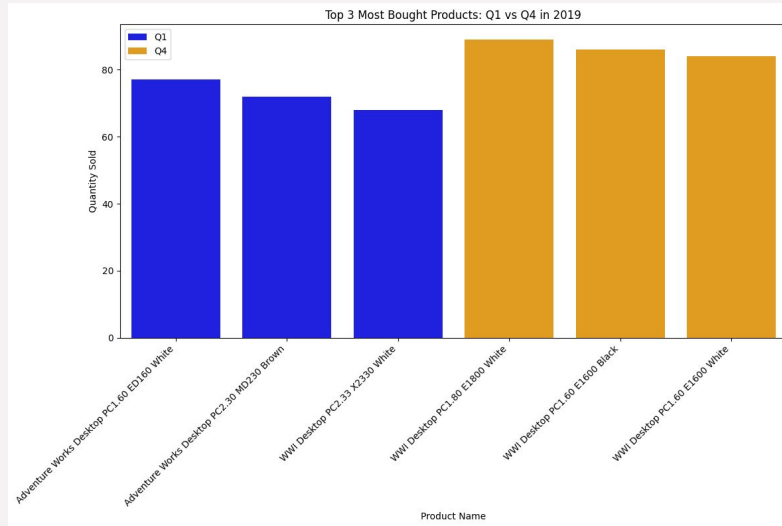
- Frequent Q1 Dips
- What is the driving decline, and how can we fix it?

# Analysis: Frequent Dips



- Frequent dips around January-April
- Historically very weak Q1 drop off

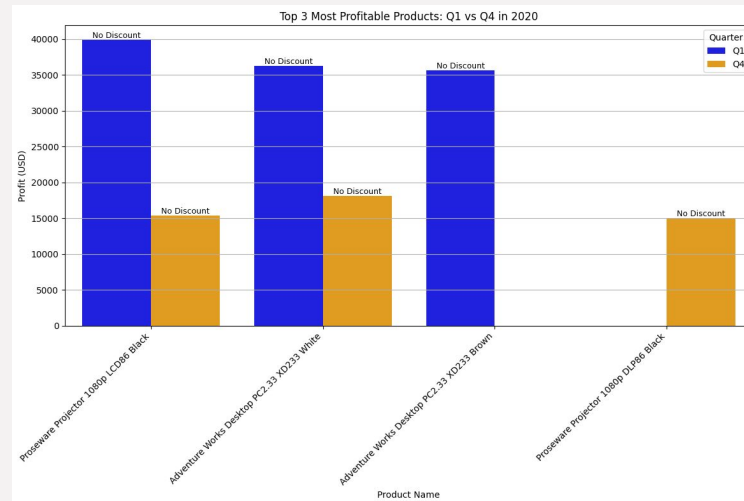
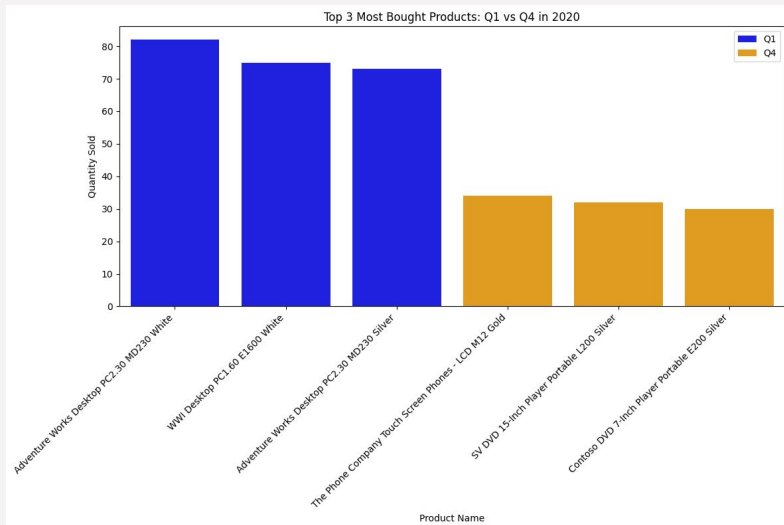
# Analysis: Quantity and Profitability



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

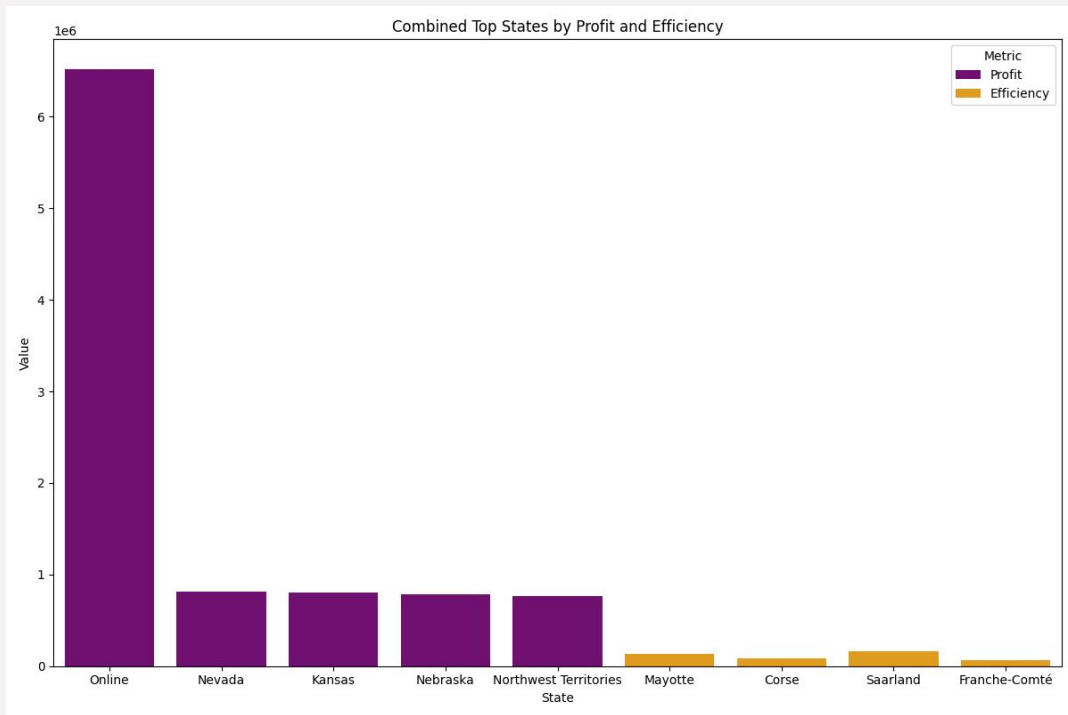


# Analysis: Quantity and Profitability



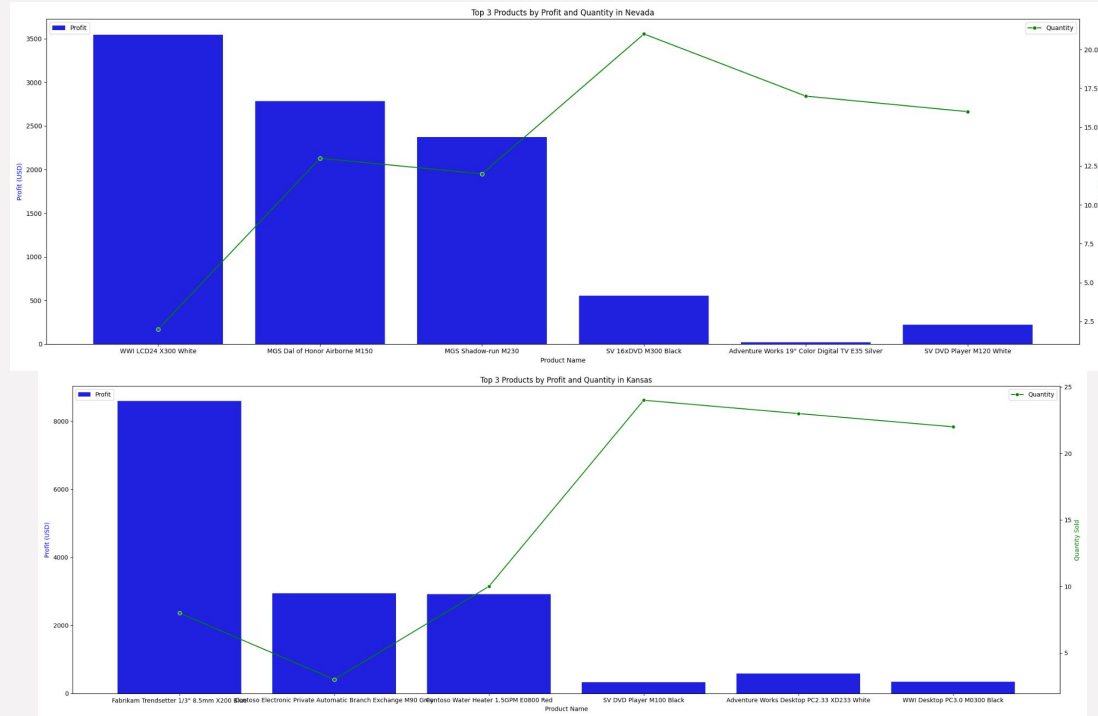
- No correlation between most profitable items vs most bought products in 2020

# Analysis: Regions by Profit



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

# Analysis: Profit x Quantity by Store

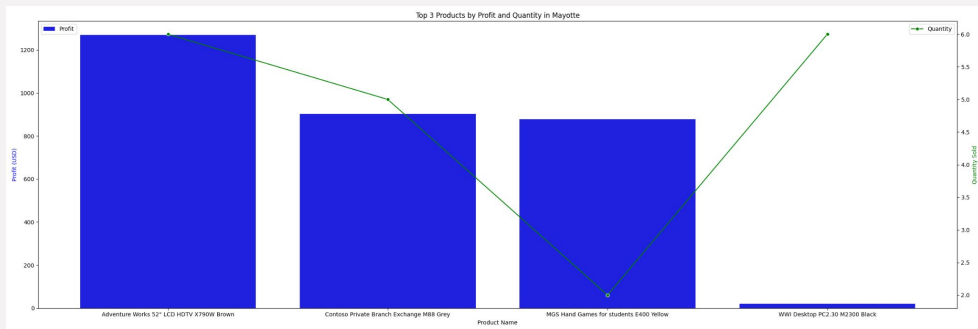


Profit (%)

Quantity (%)

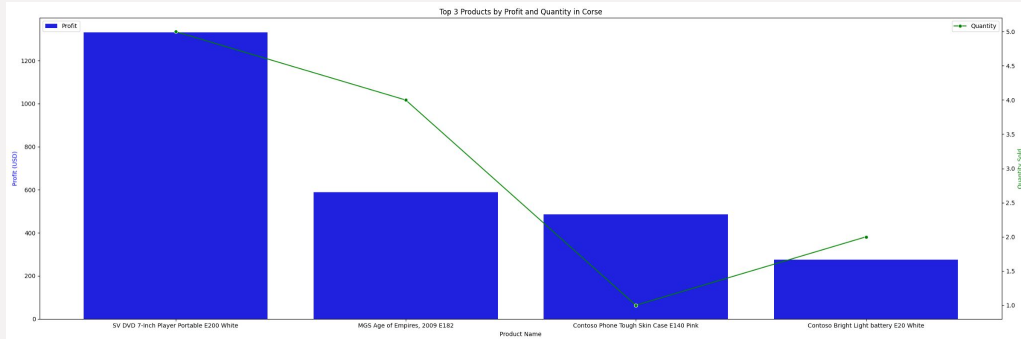
- Low quantity, High profitability
- High quantity, low profitability

# Analysis: Profit x Quantity by Store



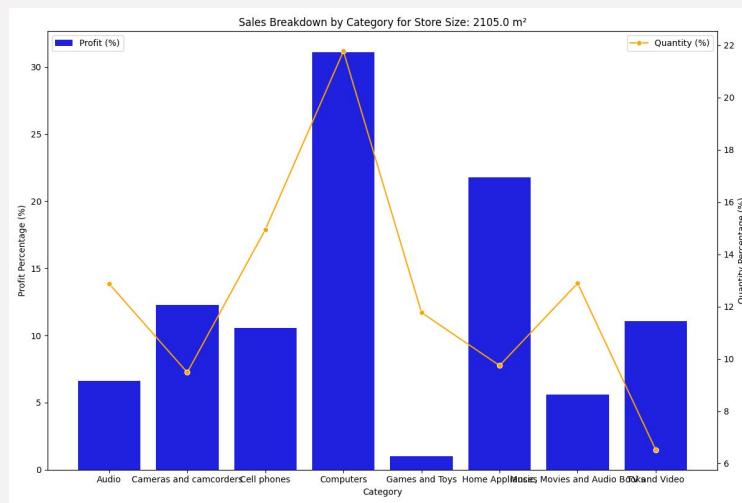
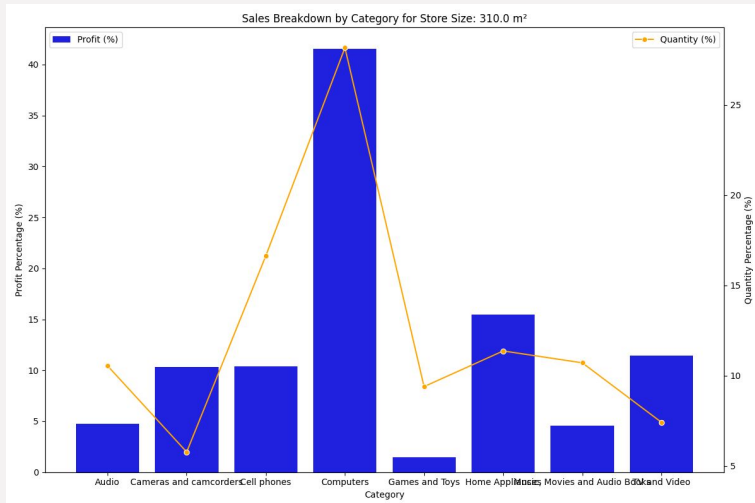
Profit (%)

Quantity (%)



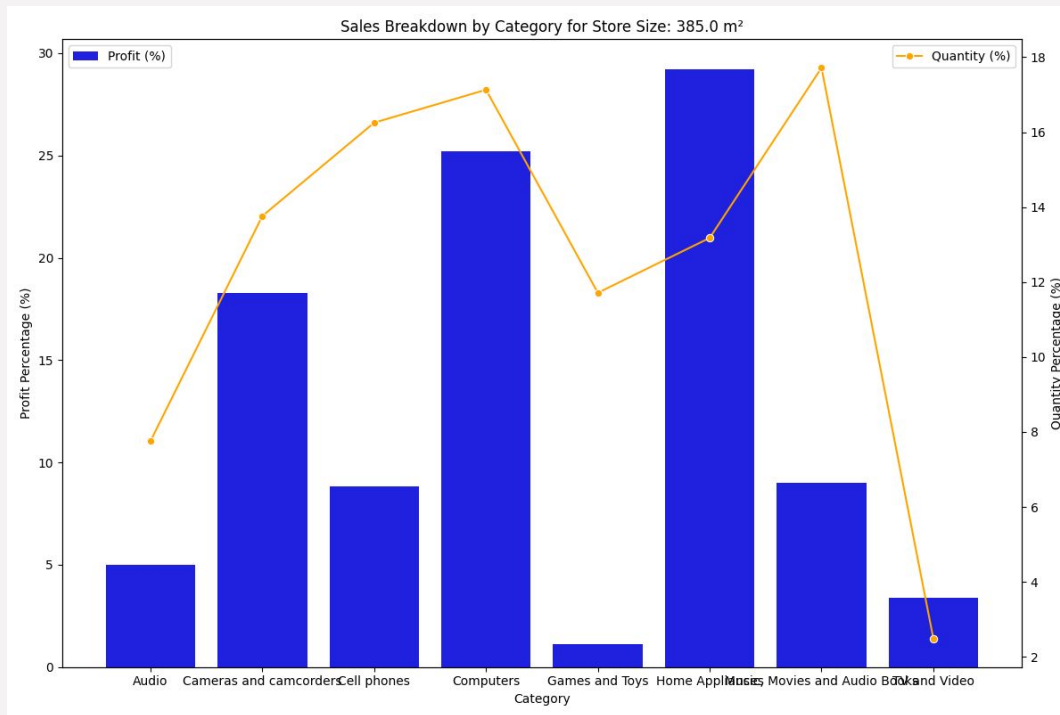
- Again, general trend for demand for products aren't nearly as possible

# 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



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

# Actionable Solutions

## 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.