

## Technical Report

### 1. Introduction

This report examines sales trends, profitability, and customer segmentation for **Paramount Co.** using historical sales data. The objective is to identify key performance metrics, understand seasonal variations, and provide recommendations to improve revenue and operational efficiency. The study leverages data on product categories, shipping methods, and regional performance to offer actionable insights for business decision-making.

### 2. Story of Data

#### Data Source

The dataset is sourced from Kaggle.com and it contains e-commerce transactions over multiple years, including customer purchases, shipping details, and profitability metrics.

#### Data Collection Process

Sales transaction data is recorded from online and offline purchases, with details such as customer demographics, product categories, and shipping modes.

#### Data Structure

- **Independent Variables:** Order Date, Ship Date, Ship Mode, Customer ID, Segment, Region, Product ID, Category, Sub-Category.
- **Dependent Variables:** Sales, Profit, Discount, Quantity.

#### Industry Context & Stakeholders

- **Industry:** Retail & E-commerce
- **Stakeholders:** Sales Managers, Marketing Team, Supply Chain Managers, Finance Team, Executives & Business Owners.

### 3. Data Splitting and Pre-processing

#### Data Cleaning

- Removed duplicate records and corrected inconsistent values.
- Standardized product categories and pricing data.
- Converted date formats to ensure accurate time-series analysis.

## Handling Missing Values

- Missing sales data points were interpolated using the average sales trends.

## 4. Pre-Analysis

### Key Trends

- Sales show seasonal peaks in **March, September, and November**, indicating holiday and promotional impacts.
- The **West and East regions** lead in total revenue, while the **South region** underperforms.
- **Technology is the highest-grossing product category**, followed by Furniture and Office Supplies.

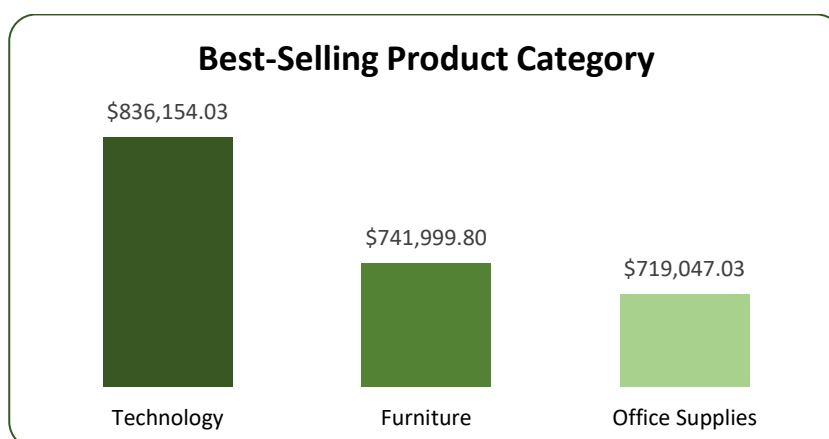
### Potential Correlations

- Higher discounts correlate with **lower profit margins**, especially in the Furniture category.
- Faster shipping methods have **higher order values**, suggesting customers may pay more for quicker deliveries.

## 5. In-Analysis

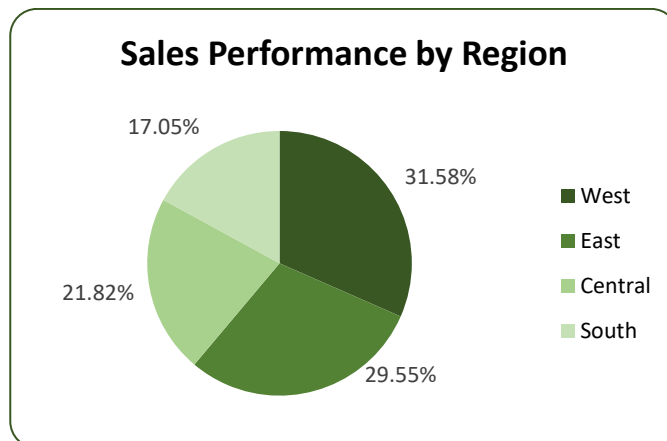
### Top Sales Trends by Category

- **Technology:** Highest sales revenue but moderate profit margins.
- **Furniture:** High sales but lowest profitability due to discounting.
- **Office Supplies:** Moderate sales but highest profit margins.



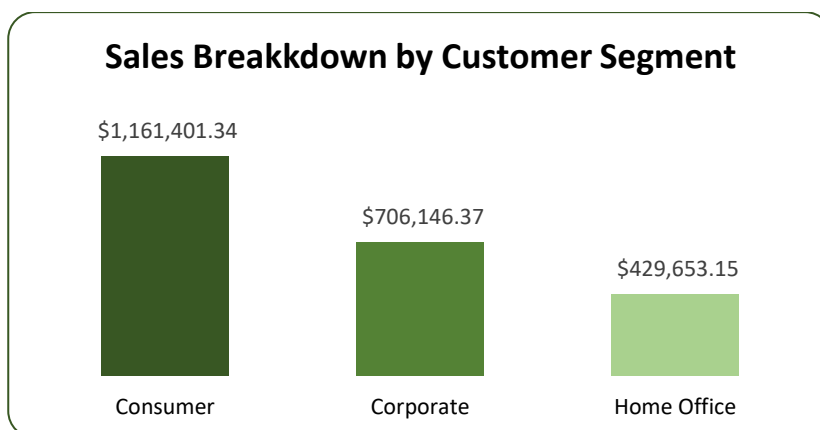
## Regional Performance

- **West and East regions** contribute over **60% of total sales**, making them key markets.
- The **South region struggles**, requiring targeted marketing efforts.



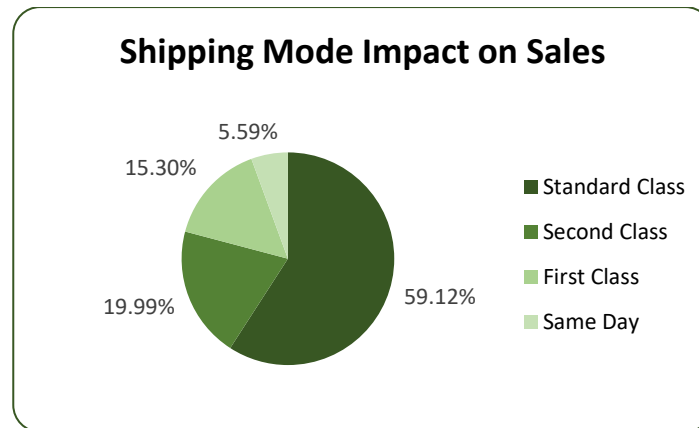
## Customer Segment Analysis

- **Consumer segment generates the highest sales** (\$1.16M), followed by Corporate and Home Office.
- **Corporate customers have higher average order values**, indicating potential for premium offerings.



## Shipping Mode Impact

- **Standard Class accounts for 59% of sales**, showing cost-conscious customer behavior.
- **First Class and Same-Day shipping have higher revenue per order**, suggesting an opportunity to promote premium shipping options.



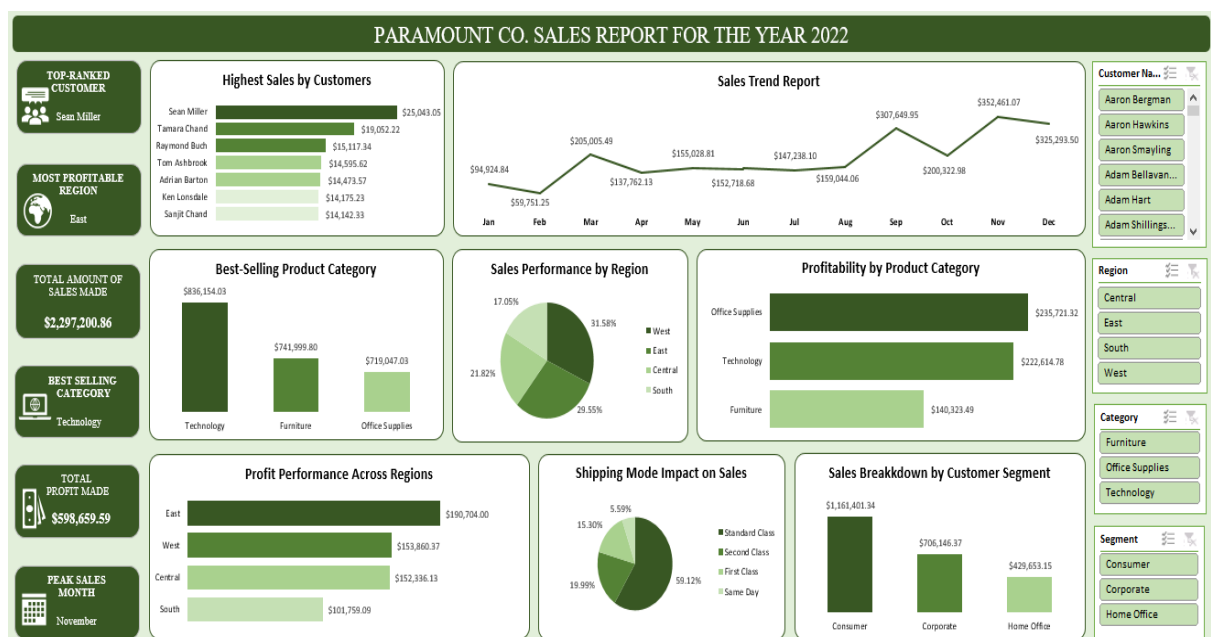
## 6. Post-Analysis and Insights

### Key Findings

- **Peak months (March, September, and November)** contribute significantly to annual revenue.
- **Office Supplies** have the highest profitability, while Furniture products need margin improvements.
- **Discounting strategies** need optimization to prevent profit erosion.

### Comparison with Initial Expectations

- Sales were expected to be evenly distributed, but findings indicate strong seasonality.
- Customer segments behaved differently than expected, with **Corporate** buyers spending more per transaction than Consumers.



## 7. Recommendations and Observations

### For Business Growth

- **Increase marketing efforts in Q1 and Q3** to take advantage of peak sales months.
- **Expand sales in underperforming regions** (South) through targeted promotions and localized advertising.

### For Profitability Improvement

- **Re-evaluate discount strategies**, especially in the Furniture category.
- **Encourage premium shipping adoption** by bundling faster delivery with high-ticket purchases.

### For Customer Retention

- **Loyalty programs for top buyers** to encourage repeat purchases.
- **Personalized promotions for Corporate clients** to maximize high-value transactions.

## 8. Conclusion

This report provides a comprehensive analysis of **Paramount Co.'s** sales trends and profitability. The findings highlight the importance of seasonal marketing, strategic discounting, and regional expansion. By optimizing pricing, enhancing customer retention strategies, and leveraging high-margin product categories, **Paramount Co.** can drive sustainable growth and improved profitability.