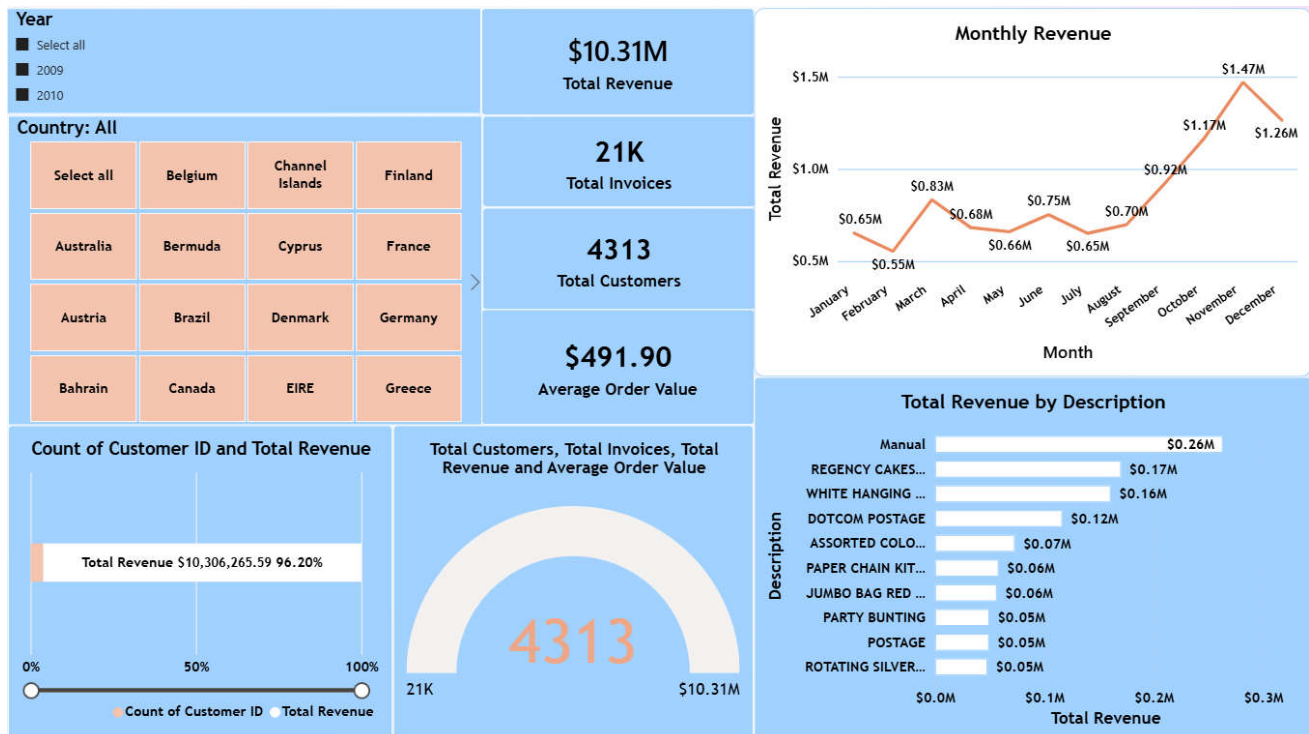# E-COMMERCE SALES ANALYSIS REPORT

ON (2009-2010) SALES DATA

Prepared as part of the Data Science & Analytics Internship Task: Task 01

November, 2025

TABLE OF CONTENTS

LIST OF FIGURES

1. Introduction

This report presents an end-to-end analysis of historical e-commerce sales data for the period 2009–2010. The primary objective is to uncover performance patterns across product categories, customer segments, and geographic locations using interactive Power BI dashboards. The insights drawn from this analysis support data-driven decision-making in areas such as sales optimization, customer retention, marketing strategy, and inventory management.

The analysis leverages modern data analytics practices including data cleaning, transformation, KPI development, trend exploration, and dashboard storytelling to illustrate how organizations can derive business intelligence from raw transactional data

2. Data Overview

The dataset contains detailed transactional records covering January 2009 to December 2010. Following structured data cleaning and transformation processes, the refined dataset consists of:

- 21,000 total invoices
- 4,313 unique customers
- $10.31 million total revenue generated
- Average Order Value (AOV): $491.90

These metrics establish a strong foundation for examining revenue behavior, customer contribution, and operational performance.

3. Key Performance Indicators (KPIs)

A set of core KPIs was developed to quantify overall business performance:

- Total Revenue: $10.31M
- Total Invoices: 21,000
- Unique Customers: 4,313
- Average Order Value (AOV): $491.90

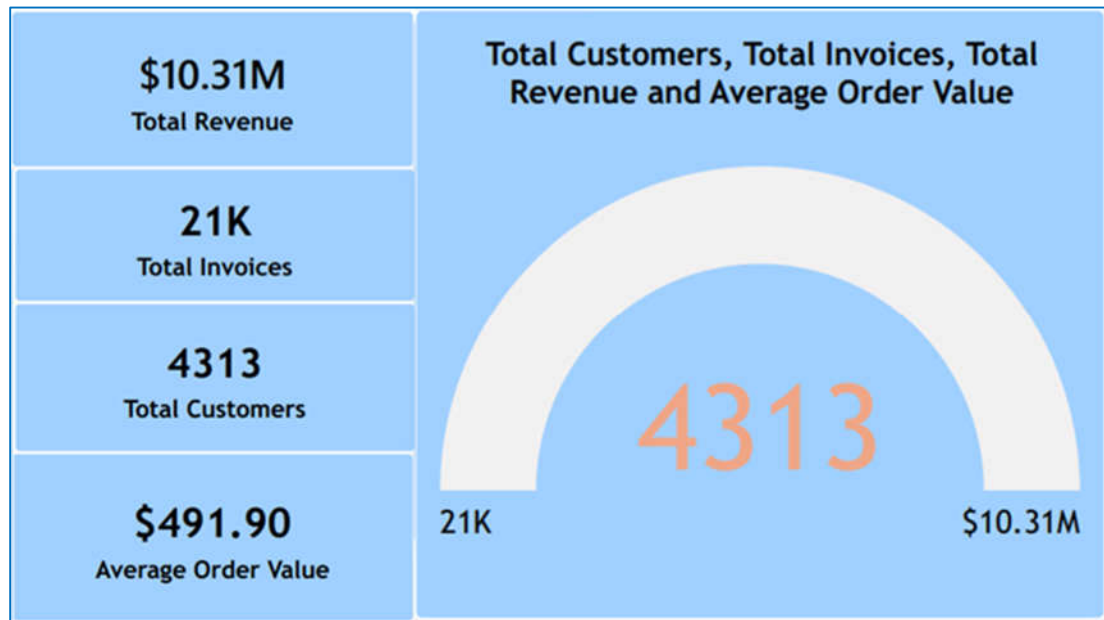These KPIs serve as high-level indicators of organizational health, customer reach, and sales profitability.

Figure 1. KPI Indicators

4. Sales Trend Analysis

Monthly revenue analysis reveals distinct seasonal patterns over the two-year period. The data highlights:

- Peak sales in November and December, driven largely by holiday demand and year-end purchasing behavior.
- Lower performance in early months, particularly January and April, indicating periods where targeted promotions or campaigns could help boost engagement.
- Consistent upward patterns near Q4, suggesting opportunities for increasing inventory and marketing spend during high-traffic seasons.

Understanding these patterns enables better forecasting, resource planning, and strategic scheduling of promotional events.
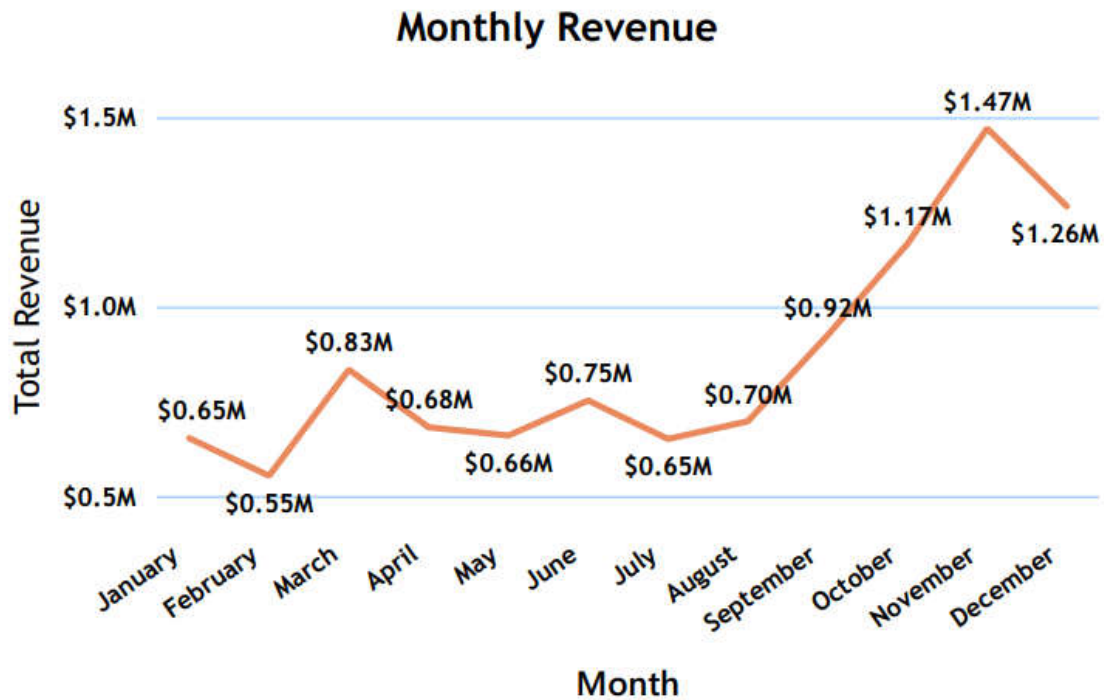
Monthly Revenue

Figure 2. Monthly revenue For the Year 2009 to 2010

5. Product Performance Analysis

A review of product-level revenue shows a strong Pareto distribution, where:

- A small group of high-performing products contribute disproportionately to total sales.
- These top products represent the core revenue drivers and should be prioritized in:
  - Marketing campaigns
  - Stock replenishment
  - Upsell and cross-sell recommendations

This analysis reinforces the importance of aligning product strategy with consumer demand patterns.
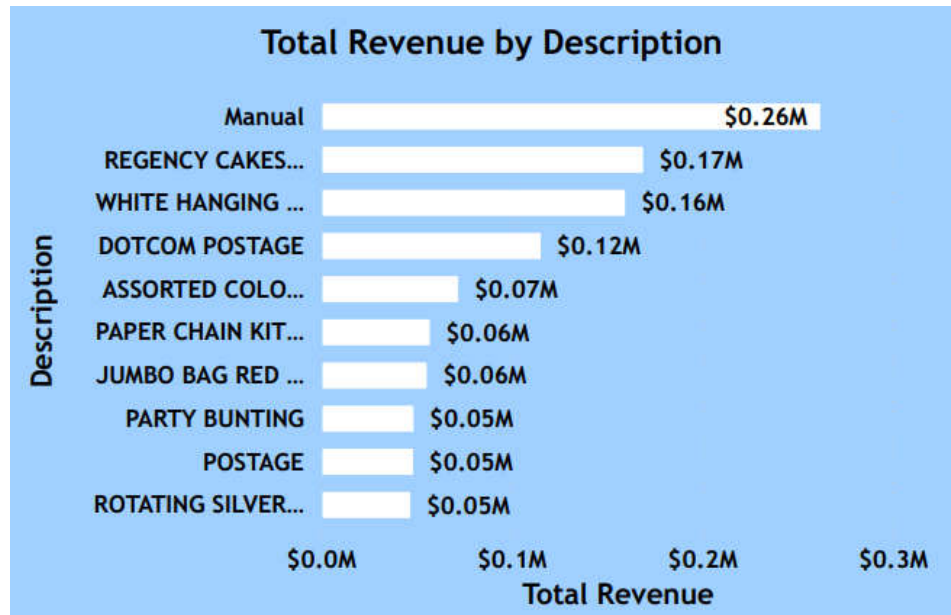
Figure 3. Revenue by Description

6. Customer Analysis

Customer contribution analysis reveals:

- 96.20% of revenue is generated by a small percentage of repeat customers, emphasizing the role of customer loyalty in sustaining business performance.

- High-value customers exhibit consistent purchasing behavior, making them prime targets for:

  o Loyalty rewards

  o Personalized discounts

  o Targeted marketing

  o Retention programs

A customer-centric approach can significantly increase lifetime value and reduce churn.
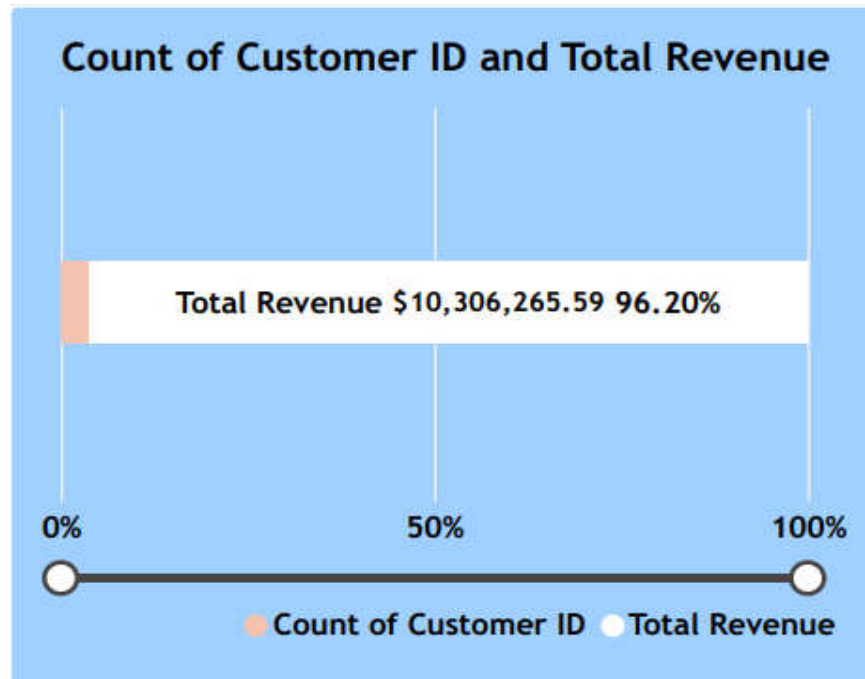
Figure 4. Customer Analysis

7. Market Distribution

Geographic segmentation uncovers substantial variation in revenue contribution across countries:

- Key markets demonstrate strong purchasing power and consistent order volumes.
- Underperforming regions may be experiencing limited brand penetration, inefficient marketing, or demographic misalignment.
- Tailoring region-specific strategies enables more effective resource allocation and potential market expansion.

Geographic insights highlight growth opportunities and potential areas for strategic intervention.

8. Recommendations

Based on the analysis, the following strategic actions are recommended:

1. Prioritize top-performing products: Increase inventory, strengthen promotional campaigns, and bundle high-demand items.

2. Capitalize on seasonal peaks: Boost marketing spends, product availability, and targeted messaging in November–December.

3. Stimulate demand during off-peak months: Use promotions, discounts, and audience-specific targeting in months like January and April.

4. Develop customer loyalty and retention programs: Engage high-value customers through reward programs, early-access offers, and personalized outreach.

5. Adopt region-specific marketing strategies: Strengthen campaigns in high-potential regions and introduce awareness drives in emerging markets.

9. Conclusion

This comprehensive analysis of 2009–2010 e-commerce transaction data demonstrates how a data-guided approach can empower businesses to understand product performance, customer behavior, market patterns, and seasonal trends. Leveraging Power BI dashboards and analytical best practices, the report provides actionable insights that support operational improvements and strategic decision-making.

The results highlight a strong proficiency in data analytics, business intelligence, and modern visualization techniques skills essential for contemporary data professionals.