

Final Project Report: Data Intelligence Dashboard Analysis

Executive Summary

The total revenue generated from the analyzed transactions is **\$229,192.47**.

The core of the business success is heavily dependent on the **Electronics** category, which dominates sales. The **East** region is the top performer, and **January** is the highest revenue month, suggesting targeted promotional efforts around the new year are effective. Customer loyalty is a significant predictor of sales, with a strong, statistically significant positive correlation between a customer's tenure and their total spending.

Key Performance Indicators (KPIs) & Sales Analysis

| KPI | Value | Insight |
|---------------|---------------------|--|
| Total Revenue | \$229,192.47 | Overall business performance. |
| Top Category | Electronics | Represents the overwhelming majority of total sales. |
| Top Product | Laptop / Smartphone | Both high-value Electronics items are the primary revenue drivers. |
| Top Customer | Mark Carter | The highest-value customer, demonstrating significant individual contribution. |
| Top Region | East | The most profitable geographical segment. |
| Best Month | January | Highest performing month for sales volume. |

1. Sales by Category

| Category | Total_Amount (\$) |
|-------------|-------------------|
| Electronics | \$171,756.05 |
| Furniture | \$49,097.68 |
| Appliances | \$8,338.74 |

Insight: Sales are highly concentrated in the **Electronics** category, which accounts for approximately 75% of the total revenue. This concentration is a key risk factor; diversifying product offerings or increasing promotional spend on **Furniture** and **Appliances** could mitigate this.

2. Top Products

| Product_Name | Total_Amount (\$) |
|--------------|-------------------|
| Laptop | \$67,499.25 |
| Smartphone | \$67,199.04 |
| Desk | \$23,399.22 |
| Monitor | \$21,999.12 |
| Bookshelf | \$15,298.98 |

Insight: Laptops and Smartphones are the two primary drivers of the entire business, generating almost identical revenue. This suggests these high-ticket items are critical to the sales model.

3. Regional Sales Performance

| Region | Total_Amount (\$) |
|---------|-------------------|
| East | \$59,288.39 |
| North | \$50,808.31 |
| West | \$41,408.68 |
| Central | \$41,288.34 |
| South | \$36,398.75 |

Insight: The East region is the clear market leader, while the South region significantly lags behind. Resources could be focused on understanding the success factors in the East and replicating strategies in the underperforming South region.

4. Top Customers

| Customer_Name | Total_Revenue (\$) |
|-----------------|--------------------|
| Mark Carter | \$15,659.65 |
| Edward Mitchell | \$11,919.77 |
| Barbara Young | \$10,649.80 |
| Patricia Moore | \$9,799.73 |

| Customer_Name | Total_Revenue (\$) |
|----------------|--------------------|
| Dorothy Nelson | \$8,269.79 |

Insight: The top customer, **Mark Carter**, contributes more than 1.3 times the revenue of the 5th ranked customer, **Dorothy Nelson**. Identifying the purchasing behaviors and common characteristics of these high-value customers is essential for developing a targeted retention and loyalty program.

5. Monthly Sales Trend

The highest sales month is **January** \$25,799.15, suggesting a significant post-holiday or new year purchasing cycle. The lowest performing month is **November** \$12,309.44, potentially due to holiday shopping deferral until December.

Advanced Analysis

A. Linear Regression: Customer Loyalty and Spend

A linear regression was performed to determine the relationship between **Customer Tenure (Customer Since in Years)** and **Total Amount Spent (Total_Amount)**.

| Statistic | Coefficients | P-value |
|------------------------|--------------|-----------|
| Intercept | -148.188563 | 0.4194 |
| Customer Since (Years) | 1087.051939 | 2.539e-14 |

Insight: The **Customer_Since (Years)** coefficient of \$1087.05 is statistically significant (P-value), indicating that for every additional year a customer has been with the company, their **Total Amount** spent increases by approximately **\$1,087.05**. This highlights the paramount importance of **customer retention and loyalty programs** as the single most significant predictor of high customer lifetime value.

B. What-If Analysis: Scenario Planning

The Scenario Manager was used to test the impact of setting different sales targets.

| Current Values | High Sales | Low Sales |

| Projected Sales Target | 40,000 | 60,000 | 40,000 |

Insight: The scenario summary shows a tested **High Sales** target of **60,000** compared to the current and low target of 40,000. This suggests management is interested in the feasibility and impact of achieving a 50% increase over the current target, which is critical for quarterly planning.

Conclusion and Recommendations

1. **Double Down on Electronics and Loyalty:** Continue to invest heavily in the **Electronics** category while simultaneously developing a robust, tiered loyalty program to capitalize on the strong correlation between customer tenure and spending.
2. **Regional Investment:** Investigate marketing strategies and product mixes in the **East** region and apply successful elements to the **South** region to increase revenue parity.
3. **Capitalize on January:** Plan major marketing campaigns and inventory stocking in December/January to maximize the high-performance window identified in the monthly trend analysis.
4. **High-Value Customer Profiling:** Conduct a deeper analysis of the Top 5 customers to build predictive models for identifying and converting new customers into high-value accounts.