

# Mrigank Raj Dubey - EDA Business Insights Report

## Overview

The eCommerce dataset includes three files: Customers, Products, and Transactions. By performing exploratory data analysis (EDA), we aim to uncover patterns and derive actionable business insights.

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## Business Insights

### 1. Correlation Analysis

- The correlation heatmap indicates that **Quantity** and **TotalValue** exhibit a strong positive correlation. This highlights that sales volume significantly influences revenue.

### 2. Seasonal Trends

- A line plot of transactions over time reveals periodic spikes in activity. This suggests that sales are likely influenced by **seasonal promotions** or events, enabling better marketing timing.

### 3. Top Product Performers

- The top 10 products contributing the most to revenue were identified. Focusing on these products can help optimize inventory management and promotion strategies.

### 4. Regional Revenue Distribution

- The pie chart analysis of revenue by region shows **Region X** contributes the highest share. This insight is critical for **targeted marketing efforts** and resource allocation.

### 5. Data Completeness

- Missing data analysis reveals negligible missing values across the datasets, ensuring high reliability for downstream analysis and model building.

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## Recommendations

1. **Focus on Top Products:** Concentrate marketing and inventory on top-performing products to maximize revenue.
  2. **Leverage Seasonal Trends:** Align promotions and stock replenishment with identified transaction peaks.
  3. **Invest in High Revenue Regions:** Allocate resources to the best-performing regions, especially Region X.
  4. **Monitor Correlations:** Exploit the strong relationship between Quantity and TotalValue to predict sales more effectively.
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## Visual Summaries

(Generated through the EDA script)

1. **Correlation Heatmap:** Shows relationships between numeric variables.
  2. **Line Plot of Transactions:** Highlights sales patterns over time.
  3. **Bar Chart for Top Products:** Displays the most significant contributors to revenue.
  4. **Pie Chart of Regional Sales:** Illustrates revenue distribution by region.
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## Conclusion

This analysis provides a comprehensive overview of sales patterns and customer behaviors. These insights should guide strategic decisions in marketing, inventory, and regional focus for improved business outcomes.