

Exploratory Data Analysis and Business Insights

A Comprehensive Analysis of E-Commerce Transactions

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Introduction:

The objective of this task is to perform **Exploratory Data Analysis (EDA)** on the provided eCommerce transactions dataset to uncover key patterns, trends, and insights that can aid in strategic business decisions. The dataset consists of three files: Customers.csv, Products.csv, and Transactions.csv, each containing valuable information about customer demographics, product details, and transaction history.

The EDA process involves several key steps, including data cleaning, handling missing values, data type corrections, and generating descriptive statistics. Through univariate and bivariate analysis, trends such as customer purchasing behaviour, top-selling products, revenue patterns, and seasonal trends will be explored. Various visualization techniques, including bar charts, line graphs, and heatmaps, will be used to present the findings effectively.

The analysis aims to derive at least **five actionable business insights**, such as identifying high-value customers, understanding regional preferences, and optimizing product offerings based on sales trends. These insights will be compiled into a concise report with recommendations for enhancing business performance.

The project will follow a structured workflow, ensuring proper organization of data, scripts, and outputs. The final submission will adhere to specified naming conventions and will be shared via a public GitHub repository.

Business Insights:

Here are 5 business insights based on the EDA:

1. **Revenue Concentration:** A few product categories contribute the majority of the total revenue, highlighting the need to focus on high-performing categories for growth.
2. **Popular Products:** Certain products consistently generate high revenue, indicating strong customer demand for specific items that could be promoted further.
3. **Regional Differences:** Some regions significantly outperform others in terms of revenue, suggesting that targeted marketing efforts or localized strategies could maximize sales in underperforming regions.
4. **Quantity-Price Relationship:** Products with higher quantities sold tend to generate higher total revenue, emphasizing the importance of stock management and pricing strategies.
5. **Revenue Trends:** Revenue shows fluctuating trends over time, potentially indicating seasonal peaks or the impact of promotions, which should be leveraged for future sales planning. These insights can help guide strategic decisions on product focus, regional marketing, and inventory management.