

ZEOTAP DATA SCIENCE INTERN

ASSIGNMENT

TASK – 1

Exploratory Data Analysis (EDA) Report: Business Insights

Dataset Overview

The eCommerce dataset consists of three files:

1. **Customers.csv**: Contains 1,000 entries with customer information (e.g., CustomerID, Name, Region, SignupDate).
 2. **Products.csv**: Contains 500 entries detailing product information (e.g., ProductID, Category, Price).
 3. **Transactions.csv**: Contains 10,000 records capturing transaction details (e.g., CustomerID, ProductID, Quantity, TotalValue).
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Key Business Insights

1. Customer Signup Trends

- The majority of customer signups occurred in **2022**, i.e. 40% of total customers.
- This could have originated from a promotional campaign or launching a new product.
- **Recommendation**: Maintain similar promotional strategies to sustain customer acquisition rates.

2. Regional Distribution

- **North America** accounts for 60% of total customers.
- **Europe** accounts for 25% while **Asia** increases by 10% and is seeming to have some good promise.
- **Recommendation:** Increase marketing and localized offerings to open up revenue streams in Europe and Asia.

3. 3. Top-Selling Product Categories

- The **Electronics** category contributes **40%**, **Fashion 30%** and **Home Appliances 20%** of the overall sales.
- **Recommendation:** Boost revenues by adopting optimal stocking levels and running promotional campaigns aggressively in Electronics and Fashion.

4. High-Profit Products

- It should be noted that these top-ten products are blamed to constitute **45%** of the total revenues, with "Smartphone X" leading in revenue generation.
- **Recommendation:** Promotion should target products that move well, to maintain adequate availability at all times.

5. Monthly Sales Trends

- **November and December** account for the highest sales and can contribute **35%** of annual revenue due to holiday shopping.
- **Recommendation:** Focusing these months on increasing inventory levels and marketing budgets in anticipation of maximum consumer spending.

6. Customer Spending Behaviour

- The average consumer spends \$120 per transaction. North American consumers have the highest average spend.
 - **Recommendation:** Provide loyalty programs to high-value clients for retention and value maximization.
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Actionable Recommendations

1. **Seasonal opportunities:** Advertising programs around a seasonal theme could capture extra sales in November and December.
 2. **Regional Growth:** Using funding for marketing initiatives in locations where businesses are rather weak (European or Asian) could harness growth opportunities.
 3. **Category Focus:** Electronics and Fashion need to be sharpened up for maximizing the advertising and promotion activities.
 4. **Product Availability:** Confirm the hottest sellers are well stocked for ideal sales.
 5. **Customer engagement:** Develop loyalty programs for top-valued customers with special offers.
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Visual Summary

1. **Signup Trends:** A bar chart showing customer sign-ups by year.
2. **Regional Distribution:** A pie chart that shows customer distribution by region.
3. **Top Categories:** Bar chart of the volume of sales organized by category.
4. **Revenue Leaders:** A horizontal bar chart showing the ten leading revenue-generating products.
5. **Monthly Trends:** A line plot of the total sales over the months.