REPORT

Task 1: Exploratory Data Analysis (EDA) and Business Insights

Step-by-Step Code Plan:

1. **Load the Data:**
   Load the Customers.csv, Products.csv, and Transactions.csv files into dataframes.
2. **Perform EDA:**
   Check for missing values and handle them appropriately.
   Generate summary statistics for each dataset.
   Visualize the distribution of key variables (e.g., product prices, transaction quantities).
   Analyze the relationship between different variables (e.g., total transaction value vs. product price).
3. **Derive Business Insights:**
   Identify patterns and trends in the data.
   Write at least 5 business insights based on your EDA.

Business Insights Report Insight

The provided code analyzes sales data from three CSV files: Customers, Products, and Transactions. It begins by loading the data into pandas DataFrames and displaying initial information like the first few rows and data types. Descriptive statistics are calculated for each dataset, and missing values are checked.

The analysis then visualizes the data using matplotlib and seaborn. A histogram shows the distribution of product prices, revealing the price range and frequency of products within those ranges. A scatter plot examines the relationship between product price and total transaction value. A crucial step is merging the three dataframes based on common keys to create a comprehensive dataset for further analysis.

Time series analysis is performed on the merged data, plotting total sales value over time to identify sales trends. A bar chart visualizes sales performance across different product categories, highlighting the best-performing categories. Finally, a bar chart displays the top 10 best-selling products based on total quantity sold.

In essence, the code provides a comprehensive overview of the sales data, offering insights into product pricing, transaction values, sales trends over time, category performance, and top-selling products. This information would be valuable for businesses to understand sales patterns, identify top performers, and potentially make informed decisions regarding inventory management, pricing strategies, or marketing campaigns. The visualizations make the insights easily digestible and facilitate quick comprehension of key trends and patterns.

We can see the top 10 selling product from which Active Wear Smartwatch is highest selling product with 100 quantities sold so far. We have second largest selling product with 95 product sold as Sound Wave Headphone .

We can see their not much difference in the sales of Homesense desk lamp , ActivewearRug ,SoundWave Cookbook .

Books has the largest sale by values in sales by product category and Electronics has the second largest sales by value respectively.