***RETAIL TRANSACTIONS DATA ANALYSIS***

***Introduction***

Retail transaction analysis plays a pivotal role in understanding consumer behavior, enhancing operational efficiency, and driving business growth. This project delves into a dataset of retail transactions to uncover meaningful patterns, trends, and insights. By leveraging data analysis techniques, it explores the performance of products, customer segments, and revenue streams. The goal is to provide actionable insights that help in strategic decision-making, such as optimizing inventory, targeting promotions, and identifying growth opportunities. Combining statistical exploration with rich visualizations, this project enables stakeholders to grasp the dynamics of retail sales effectively.

***Objective***

The primary objective of this project is to analyze retail transaction data to:

1. Understand time-based trends in transactions and revenue.
2. Identify top-performing products and their impact on overall sales.
3. Evaluate customer purchasing behaviors based on categories, locations, and payment methods.
4. Assess the influence of discounts and promotions on revenue.
5. Present findings through visualizations to facilitate strategic decision-making.

***[CODING]***

Step 1) Importing Libraries And Reading the Dataset

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Step 2) Convert 'Date' column to datetime

A screenshot of a computer

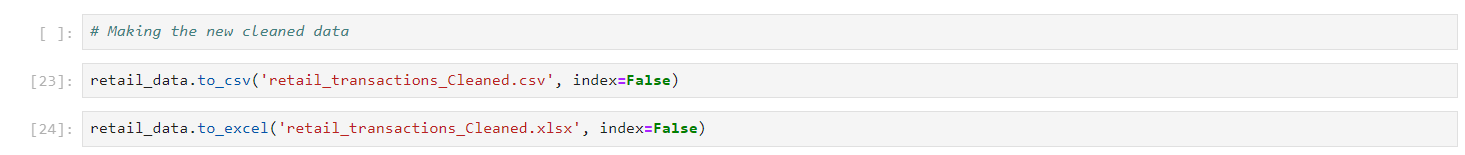
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Step 3) convert string representation of lists to actual lists

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Step 4) Create a new cleaned dataset



***EDA (Exploratory Data Analysis)***

***[Time-based analysis to explore transaction trends.]***

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A graph showing a number of blue lines

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***VISUALISATIONS (POWER BI)***

1. Column Bar Chart

A graph of a bar chart

Description automatically generated with medium confidence

1. Area Chart

A graph with lines and text

Description automatically generated with medium confidence

1. A colorful chart with text and numbers

   Description automatically generated with medium confidence Donut Chart
2. A colorful graph on a black background

   Description automatically generatedPie Chart

***CASE STUDY***

1. **Overview**:

* The project analyzes a detailed retail transactions dataset to derive actionable insights for improving business performance.
* Key objectives include identifying trends, customer behaviors, and the impact of discounts and promotions on revenue.

1. **Data Preprocessing**:

* Formatting dates for consistency and enabling time-based analysis.
* Parsing product lists to extract individual items for product-specific insights.
* Ensuring data integrity by identifying and addressing any inconsistencies or missing values.

1. **Exploratory Data Analysis (EDA)**:

* **Seasonal and Temporal Trends**:
  + Identification of seasonal spikes in transactions.
  + Time-series analysis of monthly revenues and transaction counts to highlight growth or decline periods.
* **Customer Preferences**:
  + Analysis of purchasing behaviors based on categories such as location, customer demographics, and payment methods.
* **Revenue and Sales Analysis**:
  + Determining high-revenue periods and products with the highest sales.
  + Evaluating the impact of discounts and promotions.

1. **Key Insights**:

* Most popular products and their contribution to overall sales.
* Common payment methods preferred by customers.
* Effectiveness of various promotional strategies in boosting revenue.

1. **Visualization Techniques**:

* **Bar Charts**: Used to compare product sales, customer categories, and store types.
* **Pie Charts**: Illustrating the proportion of sales contributed by each product category.
* **Donut Charts**: Highlighting customer segmentation based on location or demographics.
* **Area Charts**: Displaying trends in monthly revenue growth.

1. **Actionable Recommendations**:

* Optimizing inventory based on product performance.
* Enhancing marketing strategies for peak sales periods.
* Designing targeted promotional campaigns for specific customer segments.

1. **Final Deliverables**:

* A comprehensive report summarizing findings and insights.
* Detailed visualizations for clear communication of trends and patterns.
* Data-driven strategies to guide business decision-making.