**CUSTOMER SEGMENTATION AND CLUSTERING ANALYSIS REPORT**

1. **Data Preparation**:
   * Loaded the dataset containing online retail transactions.
   * Cleaned the data by removing missing values and duplicates.
   * Filtered out transactions with negative quantities.
2. **RFM Metrics**:
   * Calculated RFM (Recency, Frequency, Monetary) metrics for customer segmentation.
   * Created additional features such as average purchase value and extracted date components.
3. **Customer Analysis**:
   * Analysed daily and monthly sales trends to understand business performance over time.
   * Identified the top 10 best-selling products to focus on key revenue drivers.
4. **Customer Segmentation**:
   * Standardised the RFM metrics using StandardScaler to ensure comparability.
   * Applied KMeans clustering algorithm to segment customers into distinct groups based on their RFM characteristics.
   * Visualised customer segmentation results using a scatterplot, with Recency on the x-axis and Frequency on the y-axis, coloured by clusters.
5. **Insights and Recommendations**:
   * Identified clusters of customers based on their purchasing behaviour, allowing for targeted marketing and personalised strategies.
   * Derived actionable insights to improve customer engagement, retention, and loyalty.
   * Proposed strategies to enhance overall business performance and maximise revenue potential.

Overall, the customer segmentation and clustering analysis provide valuable insights into customer behaviour and preferences, enabling data-driven decision-making and strategic planning for the online retail business.