Online Retail Customer Segmentation and Analytics

Project Objective

This project analyzes an online retail transactional dataset to uncover customer and sales insights.

Using **SQL** for data cleaning and analysis, **Python** for advanced RFM-based segmentation, and **Power BI** for interactive dashboards, the goal is to identify key customer groups and business patterns that can inform **targeted marketing strategies** and **improve retention**.

Key Business Insights

1. Overall Business Performance

Total Sales Revenue: ₹2,202,530.08

Total Orders Processed: 6,287

• Total Quantity Sold: 1,271,333 items

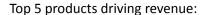
The business is generating consistent sales volume with strong order activity.

2. Monthly Sales Trends

Month (YY-MM)	Revenue (₹
2010-12	554,604.02
2011-01	475,074.38
2011-02	436,546.15
2011-03	579,964.61
2011-04	156,340.92

Insight: Sales peaked in March 2011 (₹579,964), while April 2011 (₹156,340) shows a sharp decline. This could indicate seasonal demand patterns or inventory/operational issues.

3. Best-Selling Products by Revenue



- 1. Regency Cake Stand 3-Tier ₹52,680.05
- 2. White Hanging Heart T-Light Holder ₹35,024.20
- 3. Jumbo Bag Red Retrospot ₹23,232.31
- 4. Postage **₹18,982.31**
- 5. Chilli Lights ₹16,994.46
- A mix of home décor and lifestyle items dominate sales. These products should be prioritized in marketing campaigns.

4. Customer Behavior – Repeat vs One-Time

Repeat Customers: 2,235 (96%)

One-Time Customers: 84 (4%)

Insight: The business has a very loyal customer base. Focusing on retention strategies and loyalty programs can maximize long-term revenue.

5. Product Returns

- Highest returns observed in March (27,252 items) and December (25,979 items).
- Return values align closely with sales peaks, suggesting higher sales volume naturally increases returns.
- Action: Investigate return reasons to improve product quality and reduce reverse logistics costs.

6. Sales by Day of the Week

- Highest sales occur on **Thursdays and Fridays**, suggesting customers shop more **towards the weekend**.
- Monday and Sunday sales are relatively lower.

Marketing campaigns and promotions should be scheduled mid-to-late week.

7. VIP Customers (Top Spenders)

Top customers by total spending:

- Customer 14646 ₹81,567.62
- Customer 18102 ₹45,279.41
- Customer 12415 ₹38,024.04

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These VIPs can be targeted for exclusive loyalty rewards, premium offers, and early product launches.

8. Unique Products per Order

- Some invoices include **up to 271 different items** in a single order.
 - Indicates a segment of **bulk buyers/wholesalers** who should be treated differently from individual customers.

9. Sales by Hour of the Day

Hour	Revenue (₹)
9 AM	201,797.66
10 AM	310,649.29
11 AM	300,891.01
12 PM	374,300.54
1 PM	291,686.72

- Insight: Sales are highest between 10 AM 1 PM, peaking at 12 PM (₹374,300.54).
- Marketing efforts such as flash sales and email campaigns should be scheduled in the morning to midday.

Conclusion

- Strong repeat customer base (96%) is the backbone of revenue.
- Top 10 products and VIP customers generate a large portion of sales.
- Midday and weekend-focused sales campaigns could further boost revenue.
- Returns in peak months need closer monitoring to optimize operations.

Business Impact: By leveraging segmentation, the company can build **targeted loyalty programs**, **reduce returns**, and **align promotions with customer behavior**, directly increasing profitability and retention.