
Online Retail Customer and Revenue Analytics Report

Author: Tshiamo Medupe

Date: [04 September 2025]

Introduction

The goal of this analysis is to uncover customer behaviour patterns and revenue dynamics from the Online Retail transactional dataset, and to translate those insights into actionable marketing and operational recommendations. The analysis focuses on three pillars: (1) time-series revenue trends; (2) product and customer value concentration; and (3) RFM segmentation for targeted retention and growth strategies.

1. Monthly Revenue Analysis

Overview:

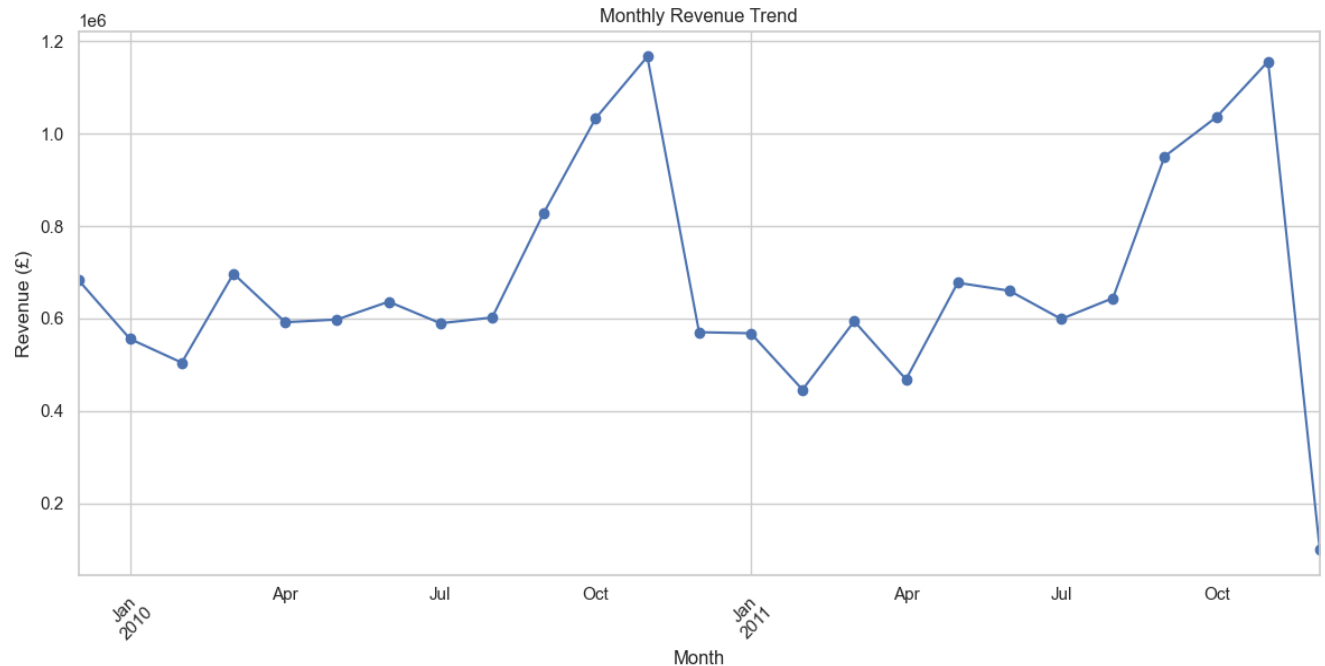
Figure 1 presents total revenue per month across the observed period.

Key Observations:

- **Seasonal Revenue Fluctuations:** Distinct revenue surges, especially late 2010 and end of 2011, likely due to holiday sales or promotions.
- **Volatility:** Peaks reaching ~£1.2M, followed by low periods, indicate reliance on time-bound events.

Interpretation & Recommendations:

- Diversify revenue streams to reduce cyclicity.
- Implement staggered promotions and loyalty incentives outside peak periods.
- Improve post-purchase engagement to retain first-time or seasonal buyers.



[Figure 1: Monthly Revenue Trend]

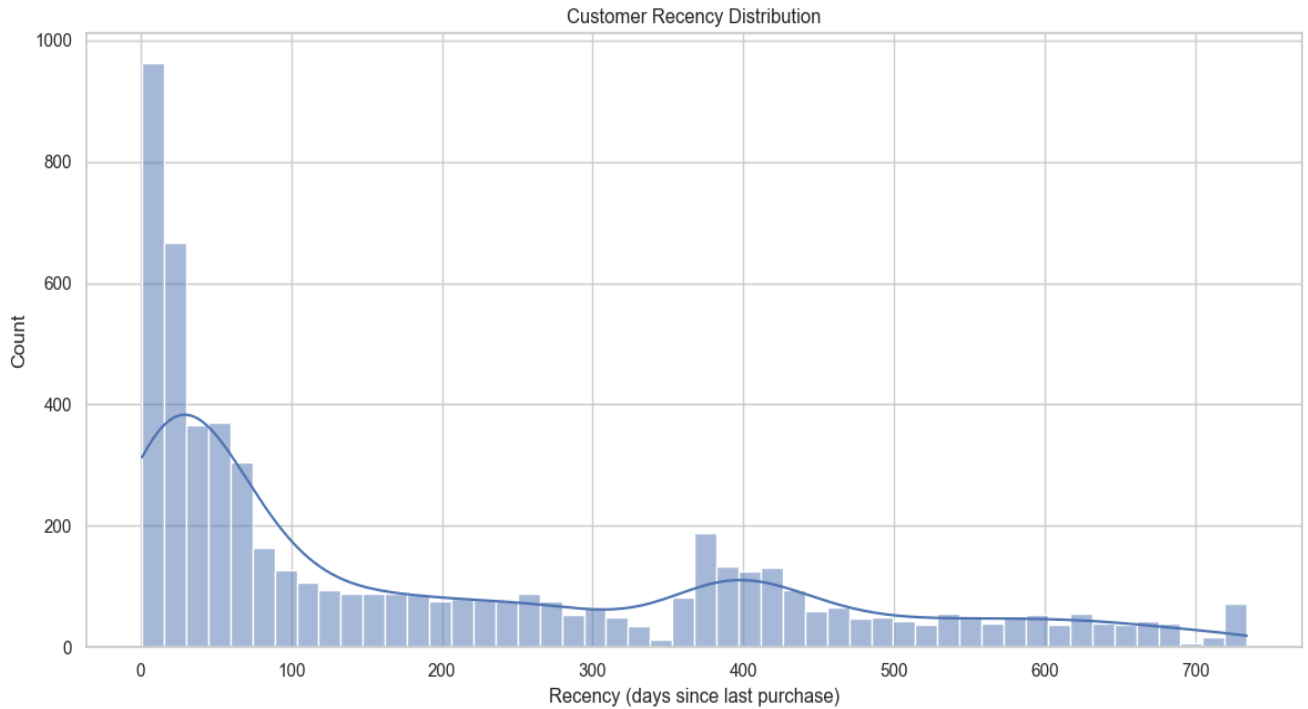
2. Customer Recency Analysis

Overview:

Figure 2 visualizes the number of days since each customer's most recent purchase.

Key Observations:

- **Dominance of Recent Purchases:** Strong peak at low recency values.
- **Long Tail of Dormant Customers:** ~20-25% of customers inactive for >400 days, suggesting annual or seasonal buying patterns.
- **Interpretation & Recommendations:**
 - Target engaged customers with personalized offers and loyalty programs.
 - Launch reactivation campaigns for dormant customers using incentives or segmentation by last purchase period.



[Figure 2: Customer Recency Distribution]

3. Customer Monetary Value Analysis

Overview:

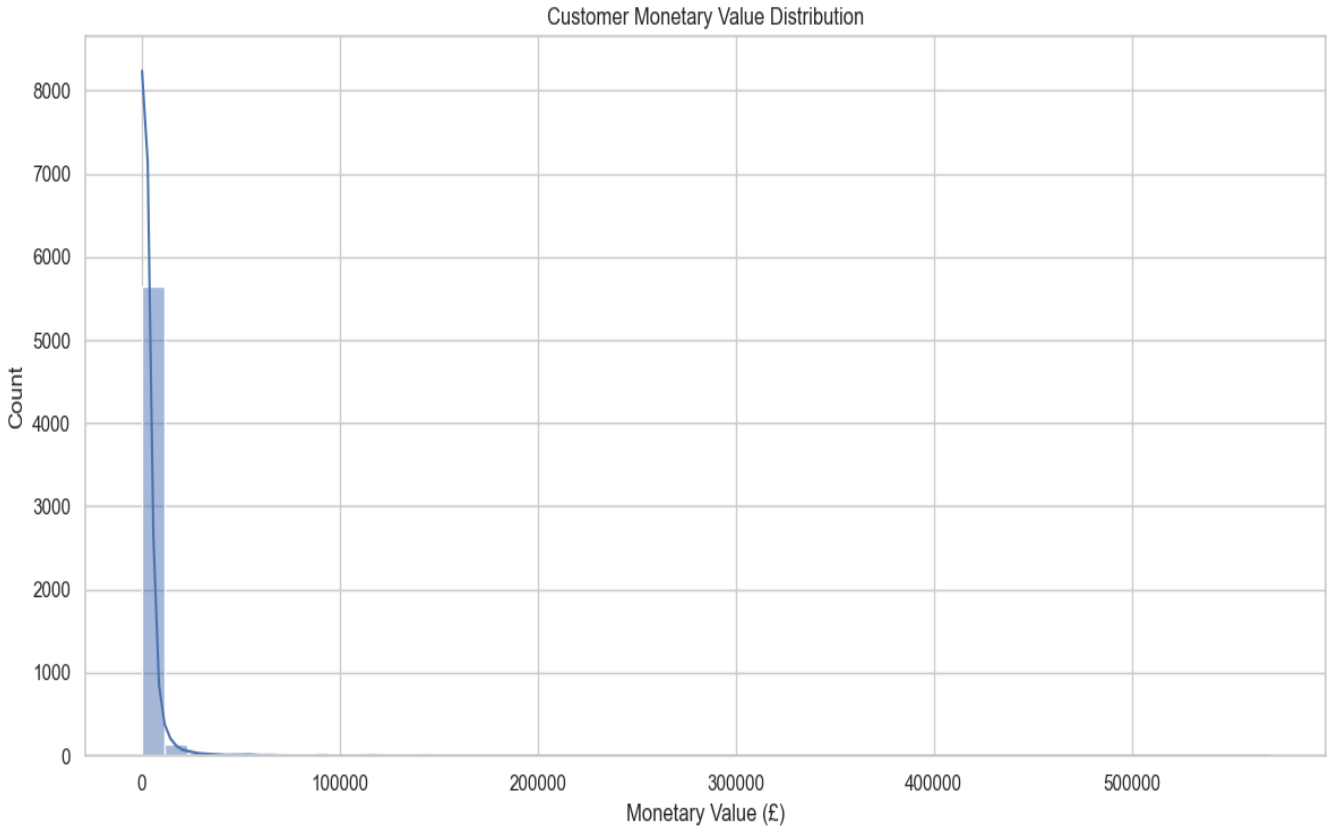
Figure 3 shows aggregate spending per customer.

Key Observations:

- **Extreme Positive Skew:** Most customers spend modestly; a small elite group spends disproportionately more.
- **Revenue Concentration:** Top 5% of customers account for ~60% of total revenue (Pareto principle).

Interpretation & Recommendations:

- Prioritize high-value customers with VIP programs and personalized engagement.
- Implement upselling/cross-selling strategies for low-value segments.



[3: Customer Monetary Value Distribution]

4. Customer Frequency Analysis

Overview:

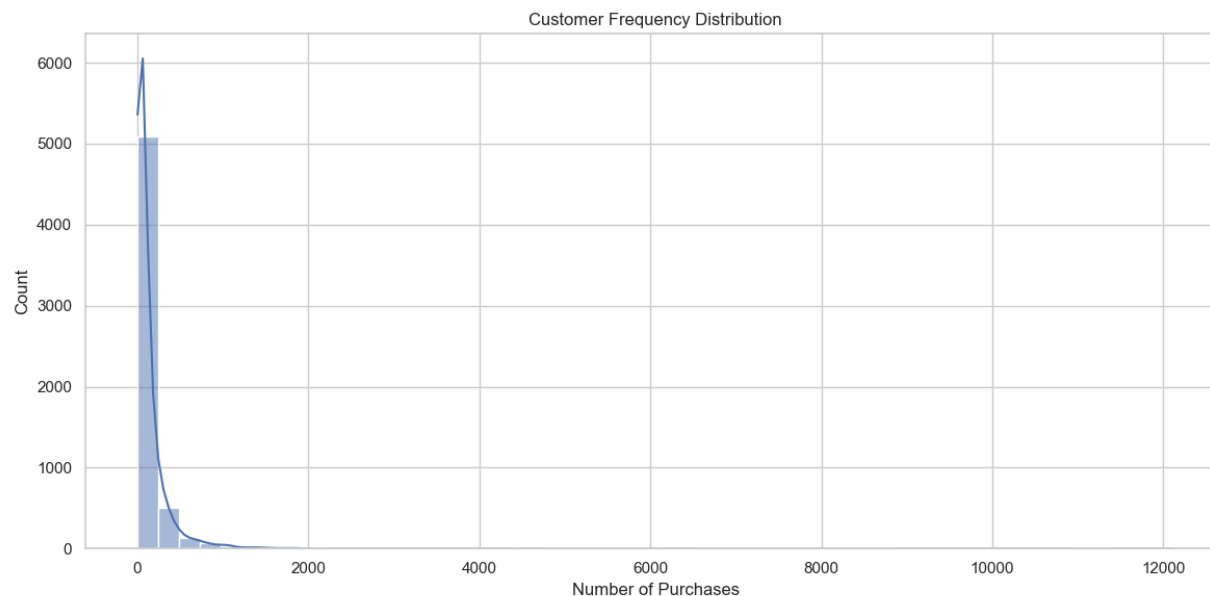
Figure 4 depicts the number of purchases per customer.

Key Observations:

- **Low-Frequency Purchasers:** Majority of customers purchase infrequently.
- **Super-Repeat Customers:** Small subset with hundreds or thousands of transactions.

Interpretation & Recommendations:

- Retain frequent buyers with high-touch engagement and exclusive rewards.
- Increase purchase frequency for other segments through loyalty programs and automated reminders.



[Figure 4: Customer Frequency Distribution]

5. Top Products and Customers

Top 10 Products by Revenue:

1. REGENCY CAKESTAND 3 TIER – £273,694.42
2. WHITE HANGING HEART T-LIGHT HOLDER – £245,488.77
3. Manual – £151,350.21
4. JUMBO BAG RED RETROSPOT – £133,467.00
5. ASSORTED COLOUR BIRD ORNAMENT – £123,330.14
6. POSTAGE – £122,527.04
7. PARTY BUNTING – £103,030.93
8. MEDIUM CERAMIC TOP STORAGE JAR – £81,243.22
9. PAPER CHAIN KIT 50'S CHRISTMAS – £73,913.76
10. CHILLI LIGHTS – £67,855.98

Top 5 Customers by Monetary Value:

Customer ID	Recency (days)	Frequency	Monetary (£)
18102	7	1017	569,501.50
14646	12	3768	516,874.50
14156	5	4038	313,437.62
14911	3	10,794	285,118.84

Customer ID	Recency (days)	Frequency	Monetary (£)
17450	3	421	244,784.25

6. Integrated Strategic Recommendations

1. **Diversify Revenue Streams:** Reduce dependency on peak seasons by offering non-seasonal products and campaigns.
 2. **Lapsed Customer Re-engagement:** Target dormant customers with win-back campaigns tailored to previous purchase behavior.
 3. **Segmented Marketing:** Leverage RFM segmentation for highly targeted communications and product recommendations.
 4. **VIP Customer Management:** Formalize VIP programs for high-value, frequent buyers.
 5. **Analytical Monitoring:** Automate tracking of RFM and revenue metrics to quickly identify new trends and opportunities.
-

7. Technical Appendix

- **Data Cleaning:** Duplicates removed, missing values handled, Quantity > 0 filtered.
 - **Feature Engineering:** TotalPrice calculated; recency, frequency, monetary metrics computed.
 - **Visualization:** Plots saved in plots/ folder; figures ready for embedding.
 - **Reproducibility:** Cleaned dataset saved as online_retail_cleaned.csv; script rfm_analysis.py is modular, commented, and ready for reuse.
-

Prepared by: Tshiamo Medupe
